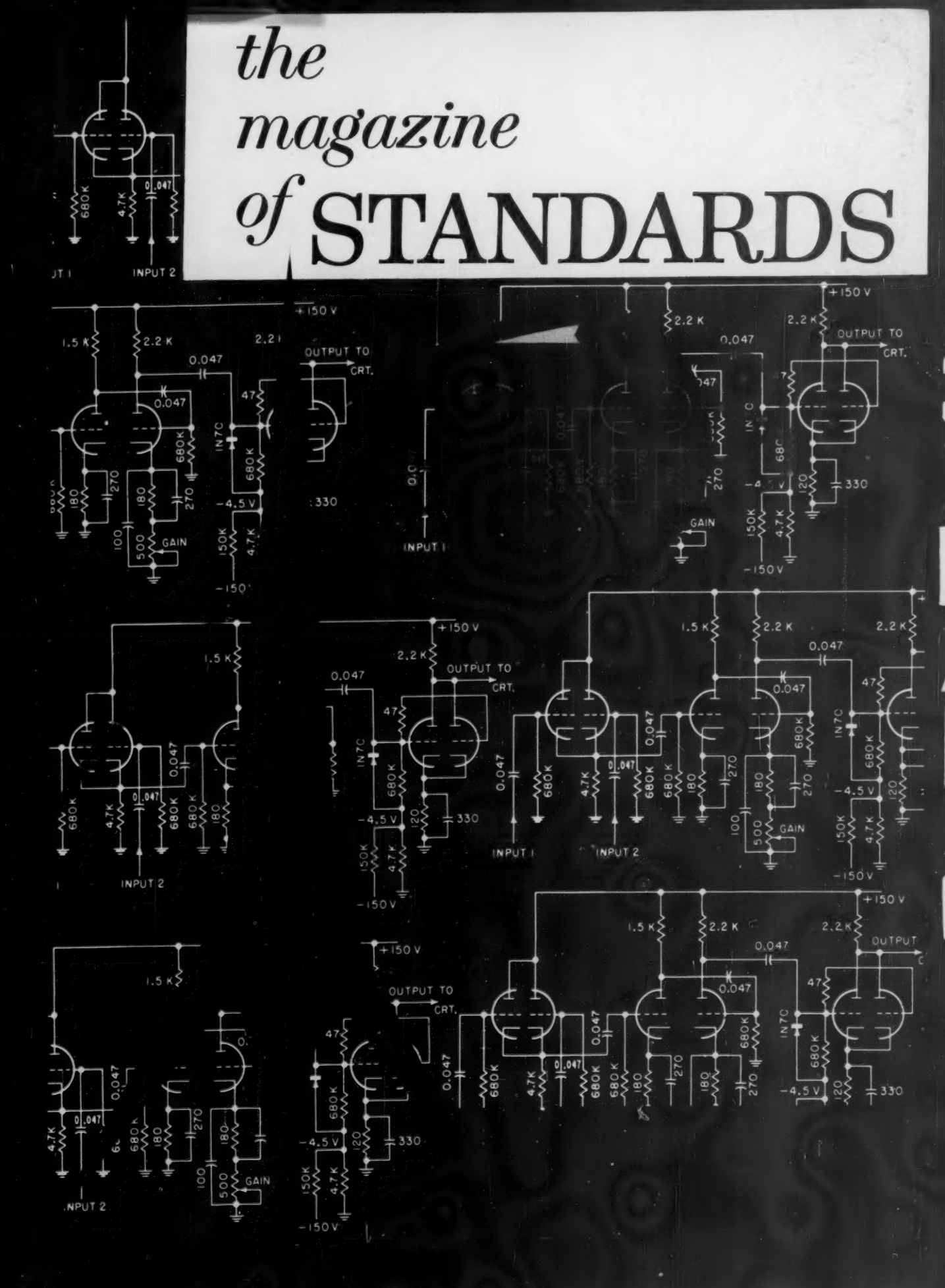
the magazine of STANDARDS



the magazine of STANDARDS

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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Opinions expressed by authors in THE MAGAZINE OF STANDARDS are not necessarily those of the American Standards Association.

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Ruth E. Mason, *Editor*
Margaret Lovely, *Art and Production Editor*

ASA

THE COVER: Today's rockets and man-made satellites have stressed the question in many minds: Do standards stifle engineering creativity? For an analysis of creativity and standards and the relation between them, see the article by Rowen Glie, page 69.

notes

• Another of the loyal group who have worked for some 40 years for the development of American Standards has just resigned. Harry E. Harris, consulting engineer of Bridgeport, Conn., now in his eighties, was the first chairman of Sectional Committee B5, Small Tools and Machine Tool Elements. Elected in 1922, he has represented ASME ever since.

In his letter of resignation to ASME, Mr Harris says in part:

"When Dr Ira N. Hollis (then president of ASME) appointed Frank Hoagland, Fred Colvin, myself, and a few others to organize the committee in 1922 and I was elected its chairman, we had little foreknowledge of what an Augean task we had accepted. The original sponsors were the ASME and the National Machine Tool Builders' Association. As the Society of Automotive Engineers had a record of continually developing new and better standards for its industry, it was invited in as a co-sponsor and became an active supporter of the committee's work. [1]

"We found that we were confronted with a chaotic situation, with those in favor of standardization out-numbered by those who were in open or veiled opposition to this important work.

"During the first six years, while I was the committee's chairman, our work was in large part 'missionary' work. My own interests had to give way in order to keep my part in the committee functioning.

"After six years of organizing the committee and its technical committees, defining its scope, formulating its projects, and attaining a well-grounded foundation from which to expand its work, I resigned from the chairmanship. Clarence W. Spicer of SAE was elected as my successor. Much progress was made during his term."

[1] Since then, the Metal Cutting Tool Institute and the American Society of Tool and Manufacturing Engineers have also become sponsors.—Editor

This Month's Standards Personality

Willis S. MacLeod

OUTSTANDING SERVICE in improving government-industry relationships in technical standards work keynotes the career of Willis S. MacLeod. As head of standardization in the Federal Supply Service, General Services Administration, Mr MacLeod is responsible for all technical standards used in supplying the nonmilitary needs of the Federal Government, including commodity standardization, Federal Specifications, and the Federal Catalog program. He maintains technical relations with all civil and military agencies of the Government, and with industry through technical societies, trade associations, and the supplying manufacturers.

Mr MacLeod started his career with the Standard Oil Company of New Jersey, which he left for experience in Sumatra with the Nederlands Kolonial Petroleum Company. There he gained experience in safety for both plant personnel and equipment, in plant engineering, construction, maintenance, and with plant manufacturing budgets.

When he returned to Standard Oil, this time with the ESSO Engineering Department, Standard Oil Development Company, he first became responsible for standards, with the title "standards engineer," and as senior engineer in charge of the Standards Group.

Here, also, Mr MacLeod first became active on standards committees of the American Society for Testing Materials and on committees under the procedures of the American Standards Association. Mr MacLeod was chairman during the organization of ASA's Company Member Conference and was the CMC's first elected chairman. He keeps in touch with the activities of ASA's Standards Council and is a member of the Miscellaneous Standards Board. He has served in important capacities for the National Institute of Governmental Purchasing, the American Society of Safety Engineers, and in the Federal Safety Council.

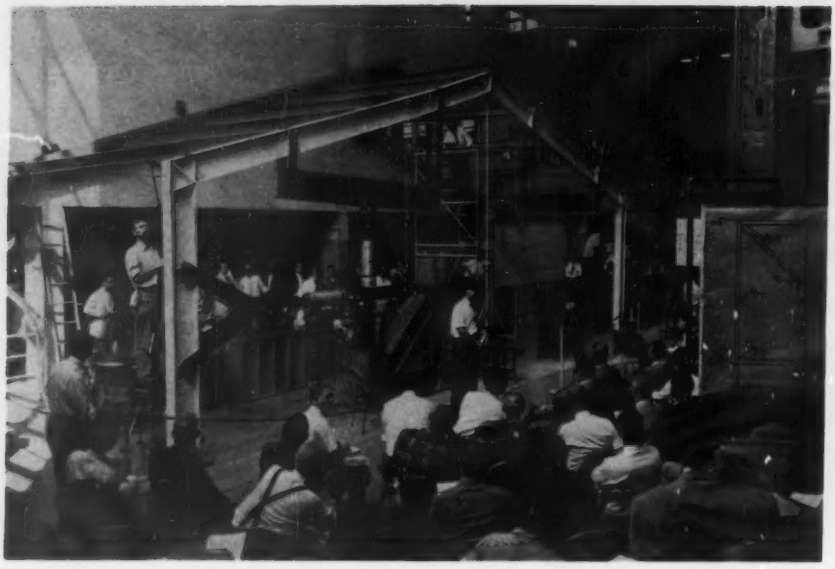
Mr MacLeod's Government service started during World War II. With the Office of Price Administration and later with the conservation and standardization division of the War Production Board, he worked on standards to conserve scarce materials while maintaining production of essential civilian commodities.

He has had a hand in attempts to formulate a standards program under the Inter-American Economic and Social Council of the Organization of American States and represented the U.S. Government at meetings on standards in Brazil in 1956 and 1957.

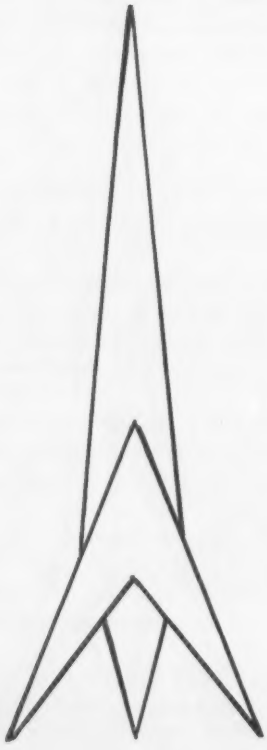
Mr MacLeod has received the Government's Meritorious Service Award, the National Civil Service League Merit Citation, and the joint award of the Standards Engineers Society and the American Society for Testing Materials. His contributions to government-industry relations were cited, particularly.

Mr MacLeod takes an active part in church work and is trustee and member of the board for several Episcopal church schools. His hobbies are fishing and "do-it-yourself" projects.

Standardizatior



"Plastic design," putting to work the reserve strength in steel, is demonstrated before professional engineers and educators at Lehigh University. Here, hydraulic jacks exert extraordinary loads on a plastically designed test frame. Under the "plastic design" theory, the most highly stressed points in the structure are counted upon to bend permanently, transferring some of the excess load to the less stressed members. Thus the structure readjusts to carry the load more efficiently. (Photo: Courtesy Fritz Engineering Laboratory, Lehigh University.)



by ROWEN GLIE

MR GLIE is standards section supervisor, W. L. Maxson Corporation, and chairman of the Metropolitan New York Section of the Standards Engineers Society. This paper, which has been adapted slightly for publication, was presented at the Society's annual meeting at Boston, Mass., September 21 and 22, 1959. It is based on the second chapter of a book being prepared by Mr Glie which is planned for publication by Engineering Publishers late in 1960.

and Creativity

CREATIVITY IS BIG BUSINESS now. Over nine billion dollars will have been spent on research and development this year [1959]; and investment in research and development is investment in creativity.

Every standards engineer has heard the accusation that standards may stifle engineering creativity, an accusation that presents an "unsatisfactory situation," since many standards engineers themselves do not know the answer.

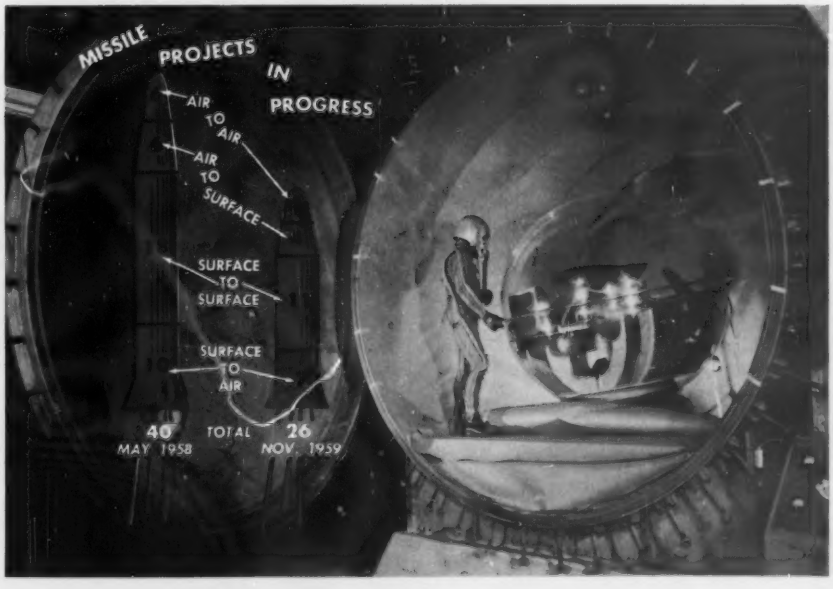
When you ask an opponent of standardization: "Why do standards stifle engineering imagination?" you get a stereotyped answer: "Because engineers, being creative people, are rebels and nonconformists."

The postulate that creative people are rebels and nonconformists comes from many professional psychologists. In a recent article published in *Machine Design*, R. W. Wallen says, "Essential creative ability is a rebellion against things as they are or have been—it is a kind of nonconformity; it springs from dissatisfaction and criticism of the existing order." No wonder the same author came to the conclusion that companies do not really want creative people.

Is the postulate true? If it is, we should radically change our educational system. We should teach rebellion and nonconformist attitudes in our schools and colleges; we should accept the anarchists' slogan, "The spirit of destruction is the spirit of creation."

The trouble with the postulate is that the statement is a paradox and not an axiom. The truth is that rebellion is destructive and creation is constructive—and the two do not mix.

Since rebellion, by dictionary definition, is resistance to and defiance of authority, rebellion cannot be the absolute prerequisite for creative efforts. Many things have been created where there has been no authority whatsoever—for example, the electrical laws of Messrs Ampere and Ohm, and the battery of Volta. And even when there is existing authority, the creator of new theories may not be in rebellion against that authority. Was Einstein in rebellion against Newton when he created his theory of relativity? What authority did



Emphasizing creativity rather than standards, rapid changes mark the development of missiles, sometimes called "an exercise in perfection." Problems and expenses of development are reflected in the changes in the number of missile projects illustrated here. The environmental space test chamber at far right indicates one goal of this creativity. (Photo: AVCO Corporation, Courtesy Steelways, published by American Iron and Steel Institute.)

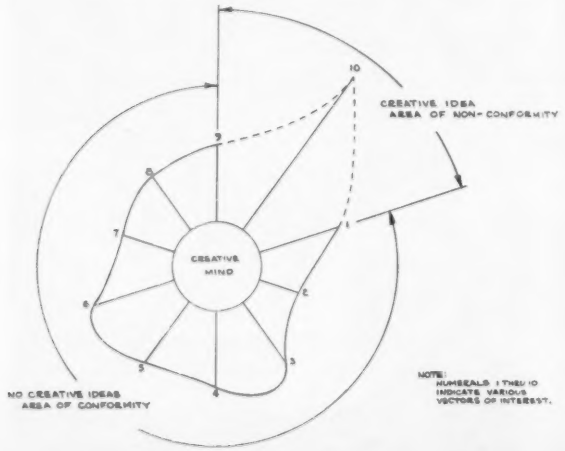
Edison rebel against when he created the phonograph and electric bulb?

New creations are often based on old authorities—the most revolutionary creation, the Theory of Relativity, is based on Plank's theory of quantum and Riemann's new geometry. Nor are nonconformity per se, constant dissatisfaction, and negative criticisms prerequisites for creation.

A creative idea is a vector; it has magnitude and direction. The magnitude is the strength of the creative mind's fascination with its idea; the direction is the subject of its thoughts. The creator is nonconformist only in the direction of his vector—in everything else he must be a conformist, since what he needs is information on everything related to his idea. This he can have only by means of standards and specifications. Even a technical or a scientific article which gives data defining its subject is nothing else than a loosely written, format-less specification. Standards and specifications give the creative man the economy of thought necessary to gather data in the shortest time. The value of his idea will be measured by him with available standards and specifications. The idea, when formulated, will be expressed in terms of standardized nomenclatures, and the mathematical and logical analysis will be done in accordance with accepted rules of mathematics and logic—the standard way of thinking.

Creative engineers do not rebel one against the other or "against things as they are"—they compete. Their problem is how to do it better, or cheaper, or just in a different way. To do this it is necessary to have knowledge of the state of the art, technology, science, and an open mind; to have the ability to be a nonconformist only when, after a good analysis, a nonconformist idea proves to be superior to the accepted one. Also, one must be able to express positive criticism.

Good examples of such positive criticism, open mind, and creative nonconformity are the geometries of Lobachevsky and Riemann based on axioms other than the geometry of Euclid which had been universally accepted for thousands of years.



ZONES OF CONFORMITY AND NON-CONFORMITY OF A CREATIVE MIND

But even this is not enough. Something else is necessary for a truly creative process. In order to describe what actually happens, we should define it. "Creative process" can be defined as finding a new solution to an existing problem or finding a new problem and a solution for it where a problem did not seem to exist.

How it is actually done, nobody knows. Psychology has not yet firmly established by what process the act of creation is accomplished in the human mind. All we can do is listen to creative people describing their experiences. And here we meet something which makes the engineer, used to the harsh, materialistic reality of technology, raise his hands in wonder.

In *Creative Thinking and How to Develop It*, the late W. H. Easton says, "Thinkers of all lands and of all times have claimed that ideas have come to them through such media as intuition, visions, and communications with the spirit world."

To some people, creative ideas come in sleep; to others they come while walking. Darwin had his idea of the survival of the fittest on the road while riding in his carriage. Henri Poincaré, one of the greatest of mathematicians, had some of his solutions while boarding a bus. Lord Kelvin, according to his own statement, had flashes of intuition for which he had to devise explanations.

There appears to be one general rule: all creative thinkers work hard on their problems, but the answer to the problem comes suddenly and from nowhere.

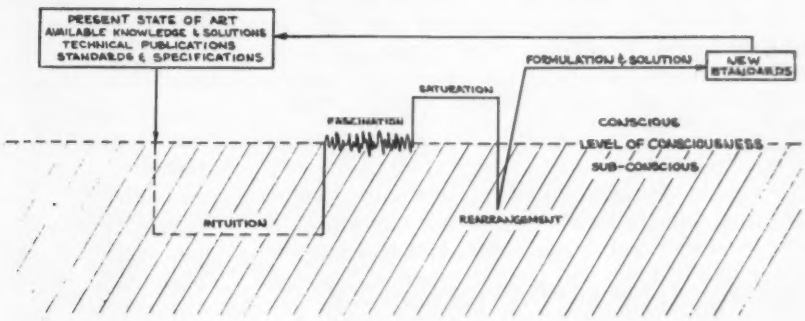
Igor Sikorsky, the famous airplane and helicopter designer, and himself a creative engineer, said in *Creative Engineering, Invention and Intuition*: "Before a new invention is made it may be considered as having partially existed in the future."

Here Mr Sikorsky put his finger on the most salient characteristic of the art of creation. To create is to bring something into the present where it has not previously existed, therefore, something from the future.

The psychologist R. W. Wallen, in the article mentioned earlier, says that, judging from answers given by creative thinkers, the following are the three requirements for creative thoughts:

1. Fascination with a problem—Somehow creative thinkers cannot let go of certain problems or types of problems.
2. Saturation with facts, ideas, data, with the background of the problem.
3. Reorganization. "Once you have finally saturated yourself with facts and ideas, they must have a chance to rearrange themselves, to shift into configurations that point toward the solution. Testimony of creative people tells us that in this period of reorganization there is no conscious concern with the problem. The moment of insight is in the midst of relaxation or even sleep."

SEQUENCE OF A CREATIVE PROCESS



In general, creative thinking passes different stages, oscillating between the subconscious and the conscious mind.

1. Subconscious: Premonition of possible new solutions.
2. Subconscious-conscious: Fascination with the problem.
3. Conscious: Saturation with data.
4. Subconscious: Reorganization and formulation of the principle of the solution.
5. Conscious: Final analysis of the principle, as a workable idea.
6. Conscious: Formulation of the solution.

A creative process in its most important, really creative stage is essentially a subconscious, intuitive process, and the act of creation is to bring it from the subconscious (future) level to a conscious (present) level.

Now we can see there is no possibility for standardization to harm truly creative ability—they are at different time levels. Creation works with future solutions; standards with the solutions of today and yesterday.

DYNAMIC standardization and true creative thinking are never in conflict—they are partners. Technological and scientific thinking is impossible without standards. The difference between creative and noncreative nonconformity can be seen from the following example:

Dowel pins have probably been used for centuries for aligning or for transfer of torque or thrust by fitting in corresponding holes of another part. Not so long ago there appeared on the market the so-called "spiral and roll" pins, which in many cases could serve for similar purposes, with the advantage of easy installation. The new pins do not replace the old dowel pins, but each has its own somewhat overlapping applications.

A few years ago, a young designer working for me decided for his own reason (no time to look up the component material) to "create" a new dowel pin. The function, material, and appearance were the same, only small dimensional changes made his dowel pin different from the commercial ones.

A standard dowel pin costs seven cents—the total cost of the two identical special dowel pins was $22.00.

The result of this reckless and inexcusable nonconformity was that the company paid about 150 times more than it should have. Engineering nonconformity may bring disastrous results when it is not justified by a really creative effort resulting in a truly new product, or at least in a greatly improved product.

How much nonconformity can an engineer afford, in general? Under ideal conditions, engineering can be roughly subdivided into three main branches: (1) Applied Engineering Research; (2) Research and Development for Customers (New Design); and (3) Quantity Production. (See chart on page 72.)

From the chart we may note that actually there are not three, but only two types of engineering:

1. The final result does not have to be predicted.
2. The final result (product) must be predicted.

In the first case there is a need for nonconformist attitudes. However, even here, the testing of the new product will usually be done by standard methods; the units of measurement will be standard; the technical report and communication will be written by using the standard mathematical and technical symbols and terminology.

In the second case, the only way the engineer can predict the result is to be certain that each component, detailed part, subassembly, and assembly function and perform exactly as specified. In order to do this, the engineer must be certain that each purchased item, the raw material, and each manufacturing process is covered by a specification or a standard and that it fully satisfies these specifications and standards. This can be done by standardized testing.

Reliability of the final product is the function of standardization of the components. The more rigid the standardization, the more easy the prediction.

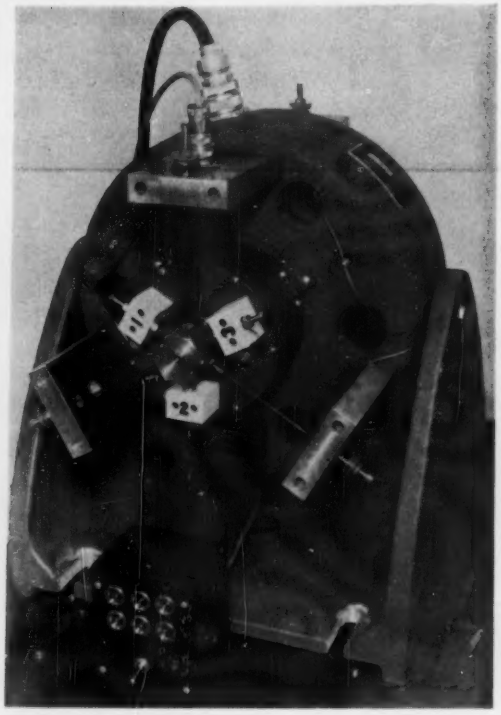
Many times it will be necessary to use a nonstandard item, but failure to consult the available specifications and standards before starting a new design does

not prove engineering ingenuity, but the lack of it, as well as ignorance of the fundamentals of engineering.

We can see now that standards do not prevent the creative ability of engineers, because standards and creativity move in different times. Creativity works with the future; standards are the present and the past. But no future can be created without a link to the present, and the standards and specifications are indispensable in any truly creative effort. They serve to evaluate the new invention; they save time in gathering data on the state of the art without which new creation is not possible; they permit description of the idea in terms and symbols which will be comprehensible to the users. And whatever the novelty of the new product, the more standardized parts, components, and processes are used, the cheaper and more reliable the new product will be.

What is more, in order for a creation to be successful, it must be accepted by society. This means that society must accept the creation as a routine solution of a problem, particularly when the problem is a recurring one. In other words, a creation is truly successful only if it is standardized. Standardization crowns the efforts of the creative mind. Standardization is nothing else than formulation for general use of the creative efforts of today and yesterday.

TYPE OF ENGINEERING	CHARACTERISTIC OF ENGINEERING WORK
Applied Engineering Research	1. There is a goal, but no predictable final product. 2. At the start of research, trial and error and guesswork are standard methods. Only after enough data are collected and arranged into various patterns to help find a relationship does a product become tangible. Trial and error are necessary, because if the final result could be predicted there would be no need for research. 3. Both major and minor failures are expected. 4. Building of special tooling and apparatus is the normal procedure. 5. Things which pester the design engineer, such as maintenance, interchangeability, procurability, and customer standards and specifications, are secondary or nonexistent. 6. The work is only tentatively scheduled, since some budget must be established; however, the date of completion is usually not scheduled and re-scheduling is normal. 7. Management control is rather nominal, since the creative boys must be "kept happy" in an academic atmosphere. 8. The whole project is a gamble (even negative results are considered useful). 9. Knowledge of the state of the art is usually useless since no information is available on a product which has no existence except in some future time. You cannot research by the book—if it is in the book, there is no research, or as Mr Charles Kettering said in *How Can We Develop Inventors?* "The point is simply that, no matter what we are doing, if it is new we can always find a book that will tell us it can't be done." "When you start a new problem, stay away from the library because it may handicap your thinking." To have an open mind it is necessary to forget all engineering learned in school. 10. Nothing can be predicted in advance. 11. Money is available.
Research and Development Work for a Customer Product or New Design	1. The final product, its function, size, appearance, performance, life, is specified and guaranteed to the customer by the company employing the engineer. 2. Delivery time is specified. 3. Work is done on a tight schedule: so many manhours for preliminary research, so many manhours for design, so many manhours for the shop, and so many manhours for quality control. 4. Design changes—minor failures are tolerated; major failures inadmissible. If the equipment does not work to the customer's specification, the project manager will be fired, retired, or transferred. 5. Trial and error will be excluded or be very slight. The engineer is supposed to know what he is doing. 6. The project manager must predict the final performance to be exactly what the customer wants. 7. Customer's standards, specifications, shop practices, drawing standards, must be strictly followed. 8. In order to save time and money and avoid duplication of effort, knowledge of the state of the art is a must. 9. Nomenclature, interchangeability, procurability are important problems. 10. Money is very tight.
Quantity Production	1. The function, the performance, the size, the appearance, the life of the product, are rigidly specified and completely standardized. 2. All detailed parts, subassemblies, and assemblies, have been "productized"—in other words, standardized for the cheapest possible production methods. 3. Shop methods and processes are covered by rigorous specifications in order that the best applicable and uniform results are achieved. 4. The location of the machinery and the movements of the workers have been standardized by the time study engineer. 5. For every purchase part, all raw material, and all components, purchase requisition standards have been prepared. 6. Fits of mating parts have been sternly standardized for interchangeability. 7. Test specifications and test cycling have been established. 8. Delivery schedules have been established for each part and for assemblies, as well as for the final product in production lots. 9. Every penny counts.

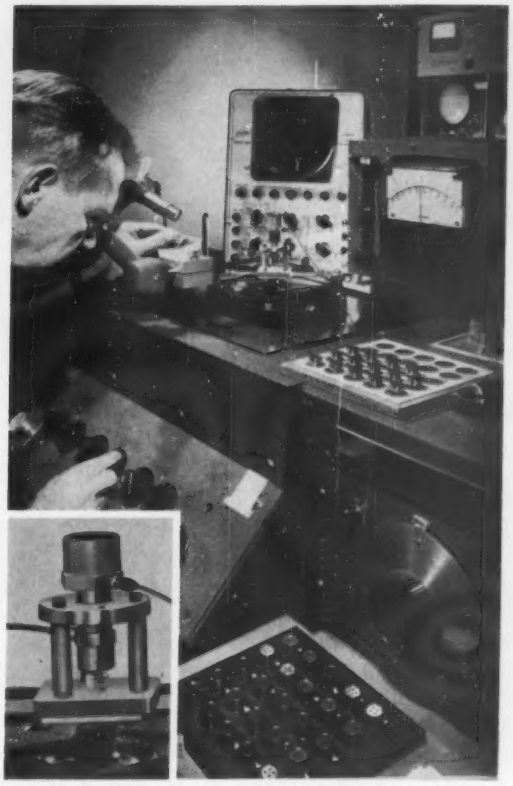


Rectilinear electrodynamic vibration pickup calibrator modified with wire suspension system to provide pure sinusoidal motion required to perform accurate calibrations. This calibrator, standardized by the reciprocity method, is a primary vibration standard. (Courtesy National Bureau of Standards)

Calibration of Shock and Vibration Pickups

by R. R. BOUCHE
Supervisor, Standards and Analysis Section, Endevco Corporation; Chairman, Writing Group S2-W-27 of Sectional Committee S2

Test setup for calibrating pickups by the comparison method. Inset shows the two acceleration pickups on fixture attached to electrodynamic vibration exciter. The output of the top pickup is compared to that of the bottom pickup (secondary standard) which was previously calibrated with reference to a primary vibration standard.



APPROXIMATELY 40 PERCENT of all missile failures are caused directly or indirectly by in-flight vibration. This is only one—but an outstanding—example of the fact that reliable measurement of shock and vibration cannot be over-emphasized.

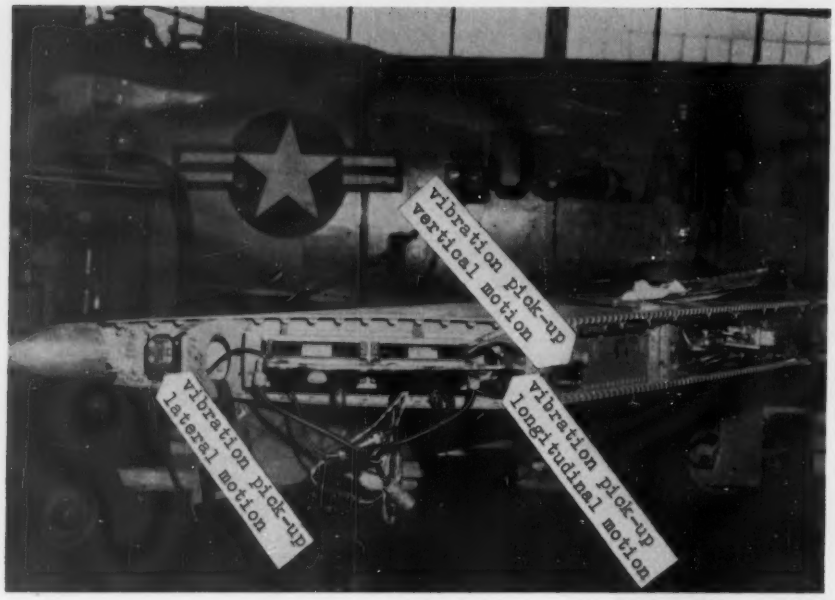
Pickups, instruments that make it possible to measure shock and vibration, are used in the development, testing, and evaluation of space vehicles, missiles, high-speed aircraft, ships, submarines, motors, and similar equipment.

Although important advances have been made in the past decade in developing better pickups, the calibration facilities in many laboratories are inadequate to evaluate the performance of pickups.

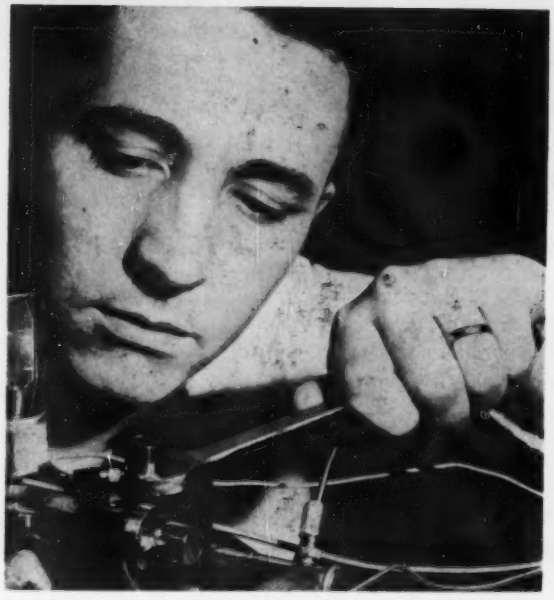
The greatest single contribution that can be made at this time toward successful and reliable measurements is to develop widespread ability to calibrate pickups accurately. A step in this direction is the publication, for the first time, of a comprehensive document discussing all the methods for calibration of shock and vibration pickups. This is the American Standard Methods for the Calibration of Shock and Vibration Pickups, S2.2-1959.[1] Wide dissemination of this American Standard will help to improve the calibration facilities needed for more accurate and reliable measurements. It will also serve as an authoritative reference for pickup manufacturers and users when describing their calibration methods.

The new American Standard describes most calibration methods in use today. These cover three basic types: constant acceleration, sinusoidal motion, and transient motion. The ranges and accuracies are given in the table. In addition to the standard calibration methods included in the main body of the standard,

[1] Other related standards also available include American Standard Method for Specifying the Characteristics of Pickups for Shock and Vibration Measurement, Z24.21-1957, and American Standard Method for Specifying the Characteristics of Analyzers Used for the Analysis of Sounds and Vibrations, Z24.15-1955.



Installation of velocity pick-ups to measure vibratory motion at the wingtip of an F-86D airplane.



Close-up view of two acceleration pickups being used to measure shaft vibration on a turbine engine. (Courtesy Ford Instrumentation Section, Dearborn, Michigan)

others that have been introduced more recently, that are more limited in use, or that are less accurate are included in the appendix. It is expected that some of the methods in the appendix will be moved to the main body of the standard as their accuracy and usefulness become more firmly established.

Constant-acceleration calibration methods included in the standard are the tilting support and the centrifuge, the two calibration methods that are the most accurate and the least difficult to perform. The most important pickups calibrated by these two methods are those used to measure low frequency or nearly static accelerations. The first method makes use of a tilting support to position accurately the acceleration pickup in the earth's gravitational field. Tilting supports can be very carefully constructed. As a result, it should be possible to achieve calibration accuracies better than those indicated in the table. In the second method, the acceleration pickup is placed off-center on a centrifuge. This method is widely used for performing calibrations at constant accelerations greater than the acceleration of gravity.

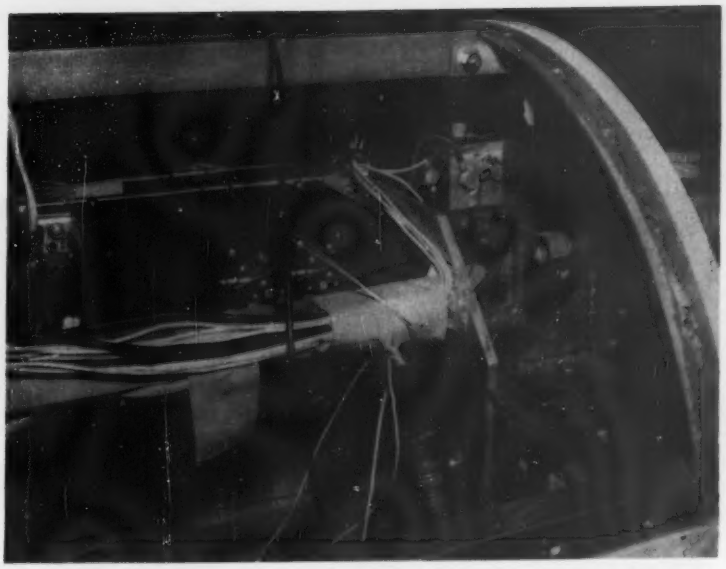
Absolute calibrations are performed accurately on rectilinear electrodynamic calibrators which produce sinusoidal motion throughout a wide range of frequencies. The reciprocity calibration of electrodynamic calibrators is described prominently in the standard because of the high accuracy obtainable over a wide range of frequencies. To perform this method in practice requires a series of tedious and time-consuming tests. Accordingly, this method usually is performed only in the primary standards laboratory.

The physical pendulum produces nearly sinusoidal motion that slowly decays due to air resistance and other losses in the pendulum. Although inherently a very accurate calibration tool, it is limited to a small frequency range and, therefore, few calibration laboratories make use of it.

The ballistic pendulum is a basic tool used for performing absolute calibrations under transient or shock motions. Although pickups generally are calibrated by a method using sinusoidal motion, pickups used to measure shock motion should also be calibrated on a ballistic pendulum in order to subject the pickup to short duration pulses. This method provides a particularly severe test of the pickup's freedom from natural frequency response.

Although the comparison method is a relative

calibration method, it is accurate and widely used; therefore, it is also included in the main body of the standard. After a pickup is calibrated by one or more of the above-mentioned standard methods, it may be used to calibrate another pickup simply by comparing the output of the calibrated pickup with that of the pickup being calibrated. Both pickups are mounted to a surface or fixture subjected to the desired constant acceleration, sinusoidal motion, or shock motion. Most frequently, comparison calibrations will be performed on exciters producing sinusoidal motion. To accomplish this, it is necessary to maintain vibration exciters which produce sinusoidal motion free of distortion and transverse motion and to use care to design adequate fixtures.



Three acceleration pickups mounted on the block measure the vertical, horizontal, and lateral motions on this rocket sled thrust plate. Accelerations up to 300g were measured at the igniter pulse during the test. (Courtesy Sandia Corporation)

The two most important methods described in the appendix to the standard are the optical direct viewing and interferometric methods. Direct-viewing calibrations with a microscope can be easily performed with errors as small as ±1 percent. This method is widely used; it is limited, however, to large displacement amplitudes of vibration and is usually used only at frequencies up to about 100 cycles per second. The fringe-disappearance interferometic method is receiving increased recognition because it is being performed with estimated errors of several percent at frequencies up to 10,000 cycles per second and higher. It is usually used to perform calibrations at displacement amplitudes of 4 microinches; therefore, it is not used at low frequencies.

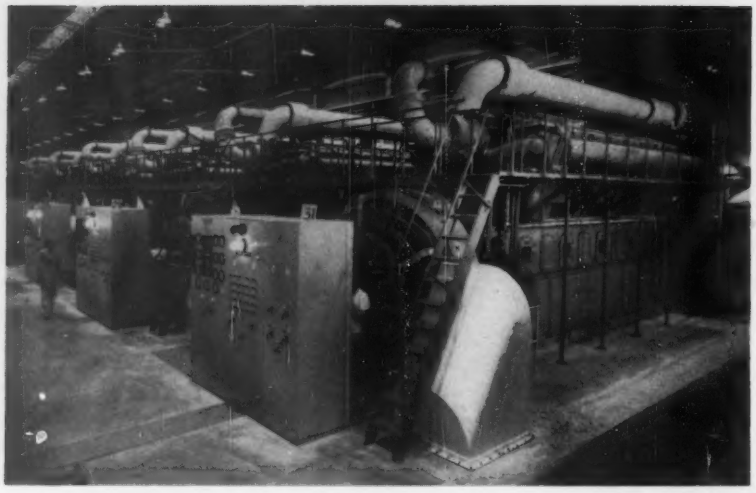
In summary, the new American Standard provides information concerning all calibration methods and will be a useful tool to all shock and vibration laboratories. Many laboratories will use the comparison method to calibrate pickups over a wide frequency range. The secondary vibration standard used in the comparison method is calibrated with reference to one of the absolute methods. The National Bureau of Standards recently established a service[2] for calibrating secondary vibration standards.

It is important to calibrate pickups on a regular basis commensurate with their use. After a pickup is subjected to rough handling, after it has undergone severe vibrations and transient motions at high frequencies and accelerations, and before it is used to measure the vibration of important test structures, recalibration should be a matter of routine.

[2] Test Fee Schedules of the National Bureau of Standards—Mechanics, reprinted from *Federal Register*, September 25, 1958, vol 23, No. 188.

Table — Estimated Ranges and Errors of Standard Calibration Methods

Method:	*Tilting Support*	*Centrifuge*	*Rectilinear electrodynamic calibrator*	*Physical pendulum*	*Ballistic pendulum*
Input	constant acceleration	constant acceleration	sinusoidal acceleration, velocity, or displacement	transient acceleration, velocity, or displacement	transient velocity or acceleration
Amplitude	−g to +g	0—60,000g	0—25g 0—50 in./sec 0—0.5 inch	0—10g 0—100 in./sec	2500g
Frequency	0	0	8—2000 cps	0.5 to 5 cps	—
Duration of pulse	—	—	—	—	0.00035—0.001 sec
Maximum weight of pickup	10 lb	100 lb at 100g to 1 lb at 60,000g	2 lb	2 lb	1 lb
Estimated errors of input	±0.0003g	±1%	±1%(8-900cps) ±2%(900—2000 cps)	±2%	±5%

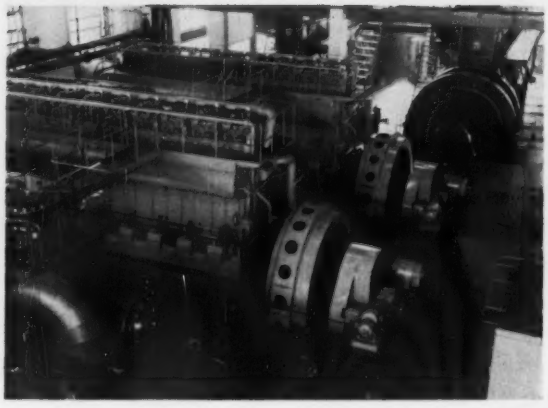


INTERNAL

Report by T. M. Robie

Above—One of two banks of Cooper-Bessemer LSV-16 internal combustion engines that generate direct current for electrolytic ore reduction in the aluminum potlines of the Reynolds Metals San Patricio, Corpus Christi, Texas, plant.

Right—These Nordberg 2-cycle engines provide electrical power in the Rockville Center, Long Island, N.Y., municipal power plant. (Photos: Courtesy Diesel Power Magazine.)



DURING THE PAST THREE YEARS, the organization known as CIMAC (Congrès des Machines à Combustion) has been attempting to prepare Rules for Acceptance Tests of Diesel Engines. It has given practically no consideration, however, to the work done by IEC/TC 19, Internal Combustion Engines, although the TC 19 work had reached an advanced state of development at the International Conference of IEC in Philadelphia in 1954. The International Electrotechnical Commission deals with everything electrical, and has the support of some 34 countries. CIMAC, on the other hand, is controlled by the engine manufacturers of only eight or ten countries.

The United States holds the secretariat for Tech-

COMBUSTION ENGINES

How hard work and determination brings results in international understanding

nical Committee 19 of IEC. The international chairman of TC 19, until his demise in October 1958, was Paul Diserens, formerly chief engineer of the Worthington Corporation. Due to his illness, little was accomplished by TC 19 from the time of the Philadelphia meeting in 1954 to the committee's meeting in 1959.

The efforts of IEC/TC 19 have been directed towards the formulation of standards applying solely to Diesel engines for the generation of electricity; those of CIMAC have attempted to encompass all applications.

The writer of this report has for many years been chairman of the Standard Practices Committee of the Diesel Engine Manufacturers Association and also vice-chairman of the IEC/TC 19 Advisory Committee to the United States National Committee of IEC. Upon the demise of Mr Diserens, the writer attempted to rebuild the USNC Advisory Group for TC 19 and promoted, through ASA, a meeting of IEC/TC 19 to be held during the 1959 IEC meeting at Madrid.

Upon learning of this contemplated meeting of TC 19, certain members of the CIMAC organization attempted to boycott the meeting, in the belief that IEC/TC 19 was opposed to any activity on the part of CIMAC and had no desire to cooperate with the latter group.

As a result, the writer arranged a trip prior to the TC 19 meeting to discuss the problem with the various groups concerned.

Robert L. Stanley accompanied the writer on this trip and was most helpful in arranging the various meetings. Mr Stanley is executive secretary of the Diesel Engine Manufacturers Association, secretary-treasurer of the United States National Committee of CIMAC, and is a member of the TC 19 Advisory Committee of the U.S. National Committee of IEC. Because of his association with CIMAC he has been of great help to TC 19 in keeping it advised of the CIMAC operations. He attended the international meeting of CIMAC in Wiesbaden, Germany, just prior to the Madrid meeting of IEC.

MR ROBIE, *Eibor Services, Inc, was named international chairman of the International Electrotechnical Commission's Technical Committee 19, Internal Combustion Engines, at the committee's meeting June 30-July 3, 1959, at Madrid, Spain. Mr Robie acted as chairman of the TC 19 meeting.*

PURPOSES OF THE TRIP

THE PURPOSES of the trip were three-fold:

First, to do some advance planning with the British delegates to the Madrid IEC meeting so that we would have their support.

Second, to attempt to change the attitude of the CIMAC group and to develop a better understanding between the two groups.

Third, to present to the IEC Technical Committee delegates at Madrid the comments which had been received from several countries relative to the specifications for Diesel engines, and also to present for discussion the new draft of the IEC rules for acceptance tests.

LONDON

Following the above plan, our first call was in London on J. F. Stanley, secretary of the British National Committee of IEC and a member of the British Standards Institution. Here we also met Colonel Richard A. Laurence, engineer in the Ministry of Supply, London, one of the delegates to the IEC/TC 19 meeting. Colonel Laurence later was appointed secretary protem.

BRUSSELS

From London we went to Brussels for a conference with A. Bourlet. This gentleman is technical director of SEM (Société d'Electricité et de Mécanique) and is one of three members representing FABRIMETAL (Federation des Enterprises de l'Industrie des Fabrications Metalliques) on the Belgium National Committee for IEC/TC 19. Mr Bourlet is also chairman of the Technical Committee of CIMAC. Also at this conference was Professor Arthur DeWinne of the University of Ghent, who was largely responsible for the preparation of the CIMAC document on acceptance tests. Professor DeWinne was one of two observers from CIMAC to the Madrid meeting of TC 19.

At the meeting with Messrs Bourlet and DeWinne we expressed the desire of the secretariat of TC 19 to cooperate with CIMAC in the preparation of a document which would be acceptable to both groups. We discussed the good and the bad points of the CIMAC document and indicated our belief that a more realistic approach would be to divide it into sections pertaining to specific applications, such as railroad, stationary, marine, electrical, etc. This same suggestion had already been made by members of their own committee. This meeting was extremely valuable in creating a better understanding of our mutual problems.

COPENHAGEN

We next called on H. Andresen, under-director of engineering of Burmeister and Wain, in charge of all their engine design, testing, and installation. Mr Andresen is president of CIMAC. Also attending this conference was Soren Hansen, chief engineer of new design. Mr Hansen is chairman of the Denmark National Committee for IEC/TC 19.

At first, Mr Andresen was of the opinion that IEC/TC 19 should hold up any further standardization work until the CIMAC document on acceptance tests was completed. We pointed out the greater maturity of the TC 19 effort and discussed the pros and cons of the CIMAC document. We also discussed some of the ideas which had developed at our Brussels meeting with Messrs Bourlet and DeWinne.

One afternoon was spent with Mr Hansen, discussing his comments on the TC 19 documents, inasmuch as other commitments prevented his attendance at Madrid. As a result of our talks, Mr Andresen indicated a much greater willingness to cooperate with IEC/TC 19 and indicated some of the difficulties facing the CIMAC Technical Committee in the preparation of an "all-inclusive" test code.

MADRID

The IEC meeting in Madrid from June 30 to July 10 was, of course, the principal reason for the trip. Our committee, TC 19, scheduled two sessions per day from June 30 through July 3, for a total of eight sessions. A small but interested and hard-working group showed real accomplishment. This group varied somewhat from day to day, but was generally composed of the following: Belgium (CIMAC), 1 delegate; England, 3 delegates; Germany (CIMAC), 1 delegate; India, 1 delegate; Italy, 1 delegate; Spain, 2 delegates; Sweden, 1 delegate; United States, 2 delegates; Yugoslavia, 2 delegates. Comments received from numerous countries on Document 19 (Secretariat) 16, dated May 1956, were discussed along with the changes recommended by the USNC as a result of these comments. Other changes recommended by the secretariat were acted upon. The meeting was opened for further discussion by the delegates in attendance.

It was the consensus of the committee that Part I, Specifications, with only a few more modifications, is sufficiently far advanced that it may be presented to the member countries of the IEC for adoption under the "Six Months' Rule." This requires approval by four-fifths of the member countries, with the understanding that countries not voting within six months will be considered as voting in the affirmative.

The relationship between IEC/TC 19 and CIMAC was discussed and the CIMAC observers were given an opportunity to present a report on the progress they have made in their Document CRIO (1959), Recommendations for Diesel Engine Acceptance Tests and Performance. This document had not been in print long enough to be read or seen by most of those in attendance, so a general critique of it was not possible. However, comments on the draft that immediately preceded CRIO, which was not materially different, indicated that it was considered to be weak in many aspects and too indefinite.

The new draft of Part II of Document 19 (Secretariat) 16, IEC Rules for Acceptance Tests, was reviewed, and constructive comments for the guidance of the secretariat were made. It was agreed that Part II would be submitted for consideration by IEC at a later date.

The U.S. National Advisory Committee for IEC Technical Committee 19

T. M. Robie, president, Eibor Services, Inc, Beloit, Wis, *Chairman*

W. C. Arnold, superintendent, Experimental Department, Fairbanks, Morse & Co, Beloit, Wis, *Secretary*

John G. Earle, marine engineer, Nordberg Mfg Co, New York, N. Y.

R. F. Kymer, chief engineer, Product Division, Cooper-Bessemer Corp, Mt Vernon, Ohio

P. S. Myers, professor, mechanical engineering, University of Wisconsin, Madison, Wis

W. B. Moore, manager, Marine and Export Section, Engine Sales, Worthington Corp, Buffalo, N. Y.

Lee Schneitter, mechanical engineer, Ebasco Services, Inc, New York, N. Y.

R. L. Stanley, executive secretary, Diesel Engine Manufacturers Association, Washington, D. C.

ONE SOLUTION TO THE SPEC PROBLEM

by Dr S. W. Brossman

DR BROSSMAN, professor of English and chairman of the Language Arts Division at Chaffey College, has been in the small tool business as West Coast representative for several Eastern tool manufacturers. During World War II, he studied at M.I.T. and helped in the design of the first height-finding radar ever constructed by the Army. He has published and edited the weekly West Covina News. *He has always been interested in city government, and is currently a member of the Planning Commission of Ontario, California, where he lives. He has been chairman for three successive years of the Ontario Safety Council. Dr Brossman has served as communications consultant in industry and has written reports on various engineering problems. An article on revising drafting room manuals by Dr Brossman appeared in the January 21 issue of* Machine Design.

THERE IS AT LEAST ONE PROBLEM in every engineering department about which there is universal agreement—not as to the solution but as to the existence of the problem. The problem is keeping track of literally thousands of specifications, not only those prepared internally, but also those prepared externally. Furthermore, after you've found the specification there is the problem of putting your finger on the right page (for each specification may consist of 50, 100, or even more pages) and there is also a problem of settling upon an official interpretation—"official," at any rate, from your company's point of view.

First of all, what is a specification? Briefly, it's simply a description of the technical requirements of a material or a product—or even a service. And there are many different kinds of specifications: those prepared by the government, by your company, and by other subcontractors. Of the government specifications, of course, defense industries are concerned with military specifications, that is, those in the MIL series which state the technical requirements for a commodity or process. But these are divided into material, product, and equipment specifications. And they are further divided into general or detail specifications. And then they are divided into performance and design specifications. And so on.

With these specifications multiplying like rabbits out of the particular government hutch you deal with, engineering personnel are kept pretty busy hopping around trying to keep track of them. And they need extra-long ears just to hear about the new specifications being born each day.

Let's say that your company is in the middle of negotiations with the customer. And called out in an over-all specification are dozens of subsidiary specifications. Logically, of course, your project office should look up each of these subsidiary specifications because each one, down to its last detail, will be part of the contract and part of the task to which your company is obligating itself. But the fact of the matter is that there are so many of these specification bunnies to track down that chances are the little beasts have become grandparents before anyone can find them. First of all, just finding the specifications is a hare-y problem itself and requires a rabbit's foot for good luck. And then finding the applicable portions in the specifications as well as resolving ambiguities are major tasks themselves.

Or let's say that anyone else in your company, for purposes of negotiations or anything else, needs a specification or an interpretation. He has the same problem. Too often there's no central place to go for the specifications, and there's no place to go for an official interpretation.

IN SOME COMPANIES specifications are written by a materials group, in others by a component reliability group, in others by a standards group, and in still others by a specifications or technical data group.

These specifications are then stored in a variety of places. In some companies the library stores some specifications; in others, blueprint files stores them. But in actual practice, these groups usually store only what they receive and that's an indeterminate percentage of the specifications. Some specifications-writing groups keep their own, project offices keep some, and so it goes, with pieces here and there scattered throughout the barnyard.

Furthermore, oftentimes there is no consistent system for interpreting and studying the subsidiary specifications called out on the higher level specifications. One project engineer may send the specifications to various groups for a look-see. Another might assign project personnel to this task. And still another might even ignore the specifications on the theory that it costs so much to find and interpret them that it's cheaper to take the risks of letting them lie quietly—unread and undisturbed. Other personnel, with the best intentions in the world—or at least in your company—may simply give up because the hunt is fruitless and the meaning ambiguous.

SINCE THE LIBRARY is traditionally a place for the storage of reading material, there's hardly a better place in your entire company to store every specification. Most industrial libraries do a pretty good job of what they're supposed to do, but, all in all, the direct contribution of many industrial libraries to the task of the company is rather oblique. True, they provide a haven for the weary and the downtrodden, and they're a sanctuary away from the hustle and bustle of competitive life in the company, but that's hardly an active and dynamic role in the scheme of things.

Instead of acting merely as a passive repository for specifications that are sent to it, your library should be given the responsibility of insuring that all specifications, and all changes, are stored and properly cataloged for instant use. Then, at least, you'd know where all the specifications are—even if you wouldn't always know what to do with them.

OBVIOUSLY, HOWEVER, THE LIBRARY can solve only part of the problem, for what's still needed is a group of three or four individuals to act as specification experts, to keep tabs on all specifications and changes, and to interpret any part of any specification. The purpose of this unit would be to provide a central place where anyone in your company could go for any kind of assistance with specifications.

First of all, should this unit be in your contracts department or engineering department? Of course, there is a close affinity with contracts, inasmuch as specifications are a part of negotiated contracts. But the specifications themselves are technical rather than contractual in nature, and their interpretation requires technical knowledge rather than contractual experience. True, a legal background wouldn't hurt; as a matter of fact it would be a positive asset, but technical orientation would be needed as a necessary corollary. Furthermore, your contracts personnel wouldn't consult these specification sharpies as much as engineers would, so your engineering department had better take over dealership of the cards.

If the specification wizards, then, are to be in engineering, should they be a unit within a group, or should they be a group by themselves?

Regardless of the size of the problem, this new task should start out small and be permitted to grow slowly. The way to start out is to plant a seed in the appropriate garden and to use no more than about three or four carefully selected specification gardeners to nourish it and make it useful. And there's probably no better spot in the engineering field than your specifications-writing backyard, if you have one.

NOW, THIS DOESN'T MEAN that the specification experts have to come out of your present specifications-writing group. It merely means that they would go into a corner of this group from any place they can be found, for personnel selected for this job may not be too easy to come by. They should have the ability to read closely, to nit-pick deeply, to interpret accurately, to make suggestions diplomatically, and to hold to the right course firmly. And the Specifications Czar should be someone who can properly represent your company in consultations with the customer and who can prevent his cossacks from riding roughshod over all the peasants who come to them for help.

THE PROPER FUNCTION of this specifications unit is, at least initially, to give service rather than to exercise control. With adequate advertising within your company you can publicize the existence of this little unit, composed of a couple of specifications experts sitting in the library, ready to assist anyone who has sense enough to know that he needs help. And if the project office doesn't want to take the time to look up all those little subsidiary specifications, all they'd have to do is call or paddle over to the library and ask that such-and-such specifications be examined so that your company knows what it's getting into before it signs on the dotted line. And the same would be true for anyone else. Any problems connected with specifications would cheerfully be handled by Specifications Service, whose motto would be trite but happy—service with a smile.

Now, what if everyone in your company ignores these little eager-beavers who are so willing to help, but who are left unwanted and neglected in the library to languish for want of services to perform?

If this deplorable situation should occur, and if the specifications problem were still with you, then steps could be taken to strengthen the little service unit and to set up a system which in essence would change Specifications Service to Specifications Control. But why trouble trouble till trouble troubles you? Admittedly, there's no house without a mouse and no throne without a thorn, but maybe the mice won't bother you too much, and maybe the czar will learn how to sit on the edge of his chair so he won't get stuck. At any rate, there's no question but that this specifications unit should start out life not by giving orders but by being helpful.

ON THE OTHER HAND, be optimistic: instead of the sky falling, maybe the larks will fall ready-roasted into your mouth. Perhaps your personnel will welcome this new unit so much that they'll wing their way over to Specificatoins Service in droves. But this flap could be easily fixed. For this would be the time to enlarge the unit, to break it loose from specifications-writing, and to set it out on its own.

The point is that at this time you do not have to worry too much about the extent of the specifications problem. Just so long as you know that a serious problem exists, you can provide the means for solution and then enlarge the means if necessary.

ASSUMING THAT EVERYONE is in agreement so far, which, of course, is most unlikely, how do you go about setting up a Specifications Service? First, a decision will have to be made to do so. Second, the person to be the leader of the band will have to be selected, and he should be given the assignment of organizing his little combo, a task that will probably take at least a month or two before it can begin accepting booking engagements.

But one thing's for sure: in most companies, the specifications problem has been kicking around so long that everybody thinks management is kidding when it proposes to do something about it. Now, there's nothing wrong with taking plenty of time in making a decision. But it's also true that some administrators work on the thesis that if you don't know what to do about a problem, just forget it and maybe it will go away. Unfortunately, however, a decision can creep along so slowly in the making that, before it's finally made, the company has put itself into a serious and indefensible position.

Something should be done in your company before that happens.

Many Changes Reflected In New Dry Cell Standard

by WALTER J. HAMER

Chairman, ASA Committee on Dry Cells and Batteries, C18; The National Bureau of Standards, Washington, D. C.

The seventh edition and sixth revision of the American Standard Specification for Dry Cells and Batteries appeared in January of this year. This new specification, known as C18.1-1959, is contained in Handbook 71 of the National Bureau of Standards. It was prepared by ASA Sectional Committee C18 under the sponsorship of the National Bureau of Standards. Available at 25 cents.

SINCE ITS INCEPTION IN 1926, the American Standard for dry cells and batteries has reflected changes in the state of the art. With each edition of the standard, new types of dry cells and batteries have been added while some types have been removed as being obsolete. Test procedures have been added or altered as new uses for dry cells or new types of dry cells or batteries have appeared. Performance data of various cells and batteries, based on annual tests at the National Bureau of Standards, have been revised from time to time, generally upwards, as the quality of cells and batteries has improved. In 1937, dry cells for industrial flashlights and hearing-aid devices were added to the specification. In 1941, all continuous tests were replaced by intermittent tests.

The latter are more indicative of the conditions under which dry cells and batteries are used. Dry cells exhibit recuperation of voltage and capacity between intermittent discharges of short duration and, therefore, give more output on intermittent than on continuous use. However, there is no direct relation between the results obtained on continuous tests and on intermittent tests of longer duration. Accordingly, intermittent tests must be run. In the 1947 standard, A/B battery packs with procedures for testing them were added to the specification. These packs were for radio use combining low voltage for the A circuit and a higher voltage for the B circuit. The 1947 specification also gave emphasis to the newer flat or miniature batteries.

In 1955, mercury cells were added to the specification. All previous specifications had covered LeClanché cells only. The mercury cell had been perfected during Warld War II and at the end of the war found wide application in commerce, industry, and in civilian use. This widespread use of mercury cells dictated the formulation of standards to cover their dimensions and testing. In the 1955 specification they were treated as equivalent to the LeClanché cell and listed as having a nominal cell voltage of 1.5 volts although 1.3 volts is a more realistic value. Owing to the increased use of mercury cells and the tightening of voltage tolerances, they are listed separately, together with separate nominal voltages, etc, in the new specification. The tests to which they are subjected remain the same as those used for LeClanché cells, however, since the end use is the same for both cell types.

The new specification includes many changes. Cell dimensions are given in both the English and metric systems; the metric system was added in line with the trend toward its increased use in commerce and industry. Cell designations recommended by Committee TC 35 on Primary Cells and Batteries of the International Electrotechnical Commission were incorporated for individual LeClanché and mercury cylindrical cells and standard flat cells, in keeping with attempts to secure international cooperation in the standardization of primary batteries. The inclusion of the dual system of nomenclature—United States and international—serves not only as a convenience to those actively engaged in dry-cell work but is instructive to the uninformed. The most notable change in the new specification is the inclusion, for the first time, of cells and batteries for use with transistorized circuits. Conventionally, these new batteries are referred to as transistor batteries. Other minor changes include a new test for lantern batteries, a new test for batteries used in alarm circuits, some new terminal designs, and the dropping of specifications for batteries to be used with "carbon-type" hearing-aids, since these types of instruments are rapidly becoming obsolete.

Sixteen standard types of cells and batteries for use with transistorized circuits are to be found in the specification and are listed here in Table 1. Some of these are conventional types also used for other purposes. In keeping with the required current drains, two new capacity tests were formulated for these batteries. These tests are designated as: (1) Hearing-aid Transistor Battery Test, 250 ohms: The battery

Table 1. Batteries for Transistor Hearing Aids ‡

Battery Designation	Diameter		Length		Width		Overall Height		Nominal Battery Voltages	Output
	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Volts	Hours
M10	0.455	12	—	—	—	—	0.135	3	1.3	30 *
M12	0.495	13	—	—	—	—	0.286	7	1.3	60 *
M15	0.455	12	—	—	—	—	0.210	5	1.3	80 *
N	0.453	12	—	—	—	—	1.188	30	1.5	160 *
M20	0.615	16	—	—	—	—	0.238	6	1.3	160 *
M25	0.455	12	—	—	—	—	0.570	14	1.3	160 *
2M25	0.485	12	—	—	—	—	1.140	29	2.6	160 *
M35	0.470	12	—	—	—	—	1.130	29	1.3	145 **
2M35	—	—	0.990	25	0.515	13	1.227	31	2.6	145 **
M35-2	—	—	0.990	25	0.515	13	1.227	31	1.3	290 **
M40	0.625	16	—	—	—	—	0.660	17	1.3	195 **
2M40	0.662	17	—	—	—	—	1.315	33	2.6	195 **
2M40D†	0.662	17	—	—	—	—	1.965	50	2.6	195 **
3M40	0.662	17	—	—	—	—	1.965	50	3.9	195 **
M40-2	0.657	17	—	—	—	—	1.320	34	1.3	390 **
5M40	—	—	1.375	35	0.662	17	2.125	54	6.5	195 **

* On 625-ohm test.
** On 250-ohm test.
† D means that a dummy (space) is placed between the two M40 units.
‡ M30 cells also used sometimes; diameter 0.625 inch (16 mm), overall height 0.440 inch (11 mm).

Table 2. Batteries for Transistor Instruments †

Battery Designation	Diameter		Length		Width		Overall Height		Nominal Battery Voltages	Output
	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Volts	Hours
AA	0.562	14	—	—	—	—	1.969	50	1.5	75 *
C	1.031	26	—	—	—	—	1.969	50	1.5	130 **
D	1.344	34	—	—	—	—	2.406	61	1.5	300 **
6F25	—	—	1.000	25	1.000	25	1.953	50	9.0	30 *
6F50-2	—	—	1.375	35	1.406	36	2.750	70	9.0	155 *
6F100	—	—	2.562	65	2.031	52	3.156	80	9.0	300 **

* On 166⅔-ohm test.
** On 83⅓-ohm test.
† AAA and N cells may also be used; dimensions of AAA cells are: diameter 13/32 inch (10 mm), height 1¾ inches (44 mm); those of N cells are: diameter 29/64 inch (12 mm), height 1 3/16 inch (30 mm).

shall be discharged through a resistance of 250 ohms for each cell in series, for one continuous 12-hour period each day. The test shall be continued until the closed-circuit voltage falls below 0.90 volt per cell, and the service shall be reported as the number of hours of discharge before the battery voltage falls below 0.9 volt per cell. (2) Hearing-aid Transistor Battery Test, 625 ohms: same as the preceding test except that 625 ohms is used in place of 250 ohms. The first and second tests are used, respectively, for the larger and smaller types of cells or batteries; both tests are used in the evaluation of units of intermediate size. The hours of service obtained for the various sizes of cells or batteries are listed in Table 1.

One of the most difficult situations facing the committee has been the standardization of batteries for use with transistors in devices other than hearing-aids —in portable radios, for example. The design of transistor circuits has been in a state of flux. However, six battery types have been used widely in transistorized circuits and the committee recommended their use as standard types with the hope that they may serve as a guide in the further development of transistor batteries. These six types with their dimensions are listed here in Table 2. The first three are common flashlight types, while the last three are novel arrangements involving 6 flat cells in series or series-parallel (the 6 refers to the number of cells, F to flat type, the numerals to the type of flat cell, and the -2 means that there are two rows of cells in parallel). Two new tests were also designed for these batteries to simulate their service in transistorized instruments. These are: (1) Transistor Battery Test, 83⅓ ohms: Each complete battery shall be discharged through a resistance of 83⅓ ohms for each 1.5 volts of nominal battery voltage during a continuous period of 4 hours daily. The test shall be continued until the closed-circuit voltage falls below 0.9 volt per cell in series in the battery, and the service shall be reported as the number of hours of discharge before the battery voltage falls below 0.9 volt per cell in series. (2) Transistor Battery Test, 166⅔ ohms: same as the preceding test except that 166⅔ ohms is used as the resistance. As above, the lower resistance is used in the testing of larger cells and the higher resistance for the smaller cells. The hours of service obtained for the various sizes of cells or batteries are listed in Table 2.

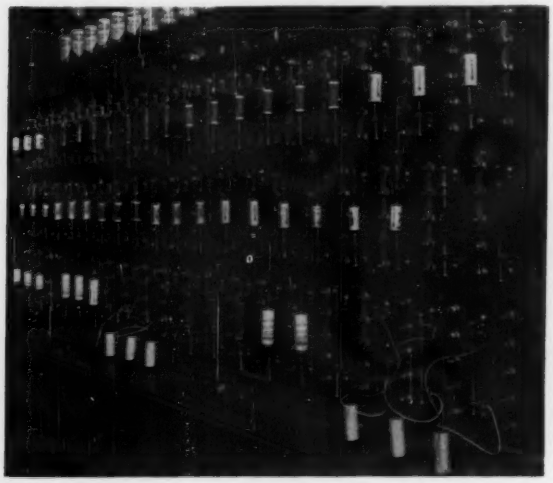


Figure 1. Panel for testing transistor batteries at the National Bureau of Standards.

In Figure 1 the test panel used at the National Bureau of Standards for the testing of transistor batteries is shown. Tests are conducted at 21 C (70 F). Contact to the cells is made with threaded bolts; no soldered connections are used. The use of threaded bolts makes possible the testing of various sizes of cells since the space between the contacts can be altered at will.

The use of transistor circuits in portable equipment has posed quite a problem where cylindrical cells are used in series. Cylindrical cells are normally standardized only as to can height or over-all height; protruding jackets or collars are not standardized as to height, shape, or form. This lack of standardization of the jacket is not serious for an individual cell but becomes serious when attempts are made to stack cells in series. When such attempts are made it is found that cells of different brands frequently cannot be used interchangeably because the jacket

or collar, or the height of the positive terminal above the can precludes contact between cells. To remedy this situation the committee recommended severe tolerances and detailed dimensions for cylindrical cells which may be used with transistor circuits. These dimensions are shown here in Figure 2.

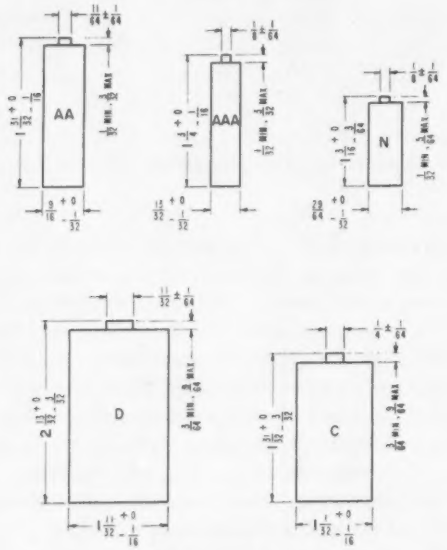


Figure 2. Transistor cell dimensions

Another feature of the seventh edition of the American Standard Specification is the inclusion, for the first time, of a test for cells or batteries used in alarm circuits. Large No. 6 cells (6 inches high and 2½ inches in diameter) are used in this service and are subjected to a continuous drain through a resistance of 300 ohms (5-milliampere drain) for each cell in series. They are rated in terms of the number of hours they will give before the voltage drops below 0.90 volt per cell. Better brands give at least 300 hours. This test illustrates the first return to a continuous test since 1941. However, the test simulates conditions that would prevail in practice; alarms run continuously until relief comes.

The new specification includes a new test for railroad lantern batteries. In recent years there has been a trend toward the use of higher watt bulbs in lanterns; actually the wattage has been doubled. In former specifications, lantern batteries, which consist of 4 F-size (3 7/16 inches high, 1¼ inches in diameter) cells in series, were tested on 32 ohms (150-milliampere drain) to a cut-off voltage of 3.6 volts. The new test requires discharges through 16 ohms (300-milliampere drain) to a cut-off voltage of 3.0 volts. In Figure 3 a comparison of the discharge curves for the old and new test is shown for typical cells. Better brands give 50 hours of service on the old test and 20 hours on the new test; under the new requirements brighter lights (1.4 versus 0.6 candles) are obtained, however. Also the 0.3-ampere lamp has

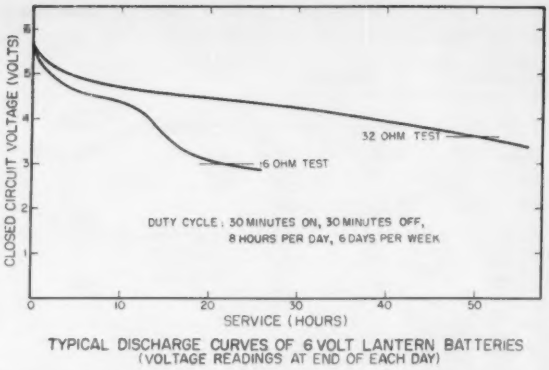

CLOSED CIRCUIT VOLTAGE (VOLTS)
32 OHM TEST
16 OHM TEST
DUTY CYCLE: 30 MINUTES ON, 30 MINUTES OFF,
8 HOURS PER DAY, 6 DAYS PER WEEK
SERVICE (HOURS)
TYPICAL DISCHARGE CURVES OF 6 VOLT LANTERN BATTERIES
(VOLTAGE READINGS AT END OF EACH DAY)

Figure 3. Comparison of discharge curves resulting from the old (32 ohm) and the new (16 ohm) tests.

a rated life of 30 hours compared with 15 hours for the 0.15-ampere lamp.

In addition to the above illustrations, the new specification covers tests and performance data for a wide variety of cells and batteries. In Figure 4 a picture is shown of the largest battery and the smallest cell covered by the specification.

The publication of this revision of the American Standard Specification marks the completion of another step in keeping current a nationally recognized specification. Since the beginning of the formulation of this standard, the manufacturers and large industrial users have cooperated with the Government in perfecting tests and specifications for the various types of dry cells and batteries, which has resulted in a truly effective specification. This standard not only serves in making possible the interchangeability of cells and batteries of various brands but has served as a stimulant for improved quality in finished products. Its influence is also seen in the international standard formulated by the International Electrotechnical Commission.

Figure 4. Comparison of the largest battery and the smallest cell covered by the standard.

This is the twenty-eighth installment in the current series of rulings as to whether unusual industrial injury cases are to be counted as "work injuries" under the provisions of American Standard Method of Recording and Measuring Work Injury Experience, Z16.1-1954 (Reaffirmed 1959). The numbers in parentheses refer to those paragraphs in the standard to which the cases most closely apply. Decisions on unusual industrial injury cases are issued periodically by the Z16 Committee on Interpretations.

Sectional Committee Z16 is sponsored by the National Safety Council and the Accident Prevention Department of the Association of Casualty and Surety Companies.

INDEX TO CASES 400-700. An index to Cases 400-700 has now been completed. Arranged numerically by the number of the applicable paragraph of American Standard Z16.1-1954 (R1959), the index includes the number of the case indexed and a key letter indicating what the decision was in each case. Each index reference includes a brief description of the case.

Reprints of Cases 400-700, with the index, are now available from ASA at $2.25. Discounts for quantity orders may be obtained on request.

Are These Cases Work Injuries?

CASE 741 (1.6)

A company in an arid location with a high wind velocity and much dust reported that injuries caused by wind-blown foreign bodies were quite numerous. The company had been including in its work injury rates those cases which occurred during work periods as accidents arising out of and in the course of employment; but had been excluding those which had happened during lunch periods on the basis that the high velocity wind and dust were common to the entire island and not merely to the company property. In delving into off-the-job accident statistics the company discovered nearly as high a percentage of such cases occurring off the job as they found in their on-the-job comparisons. They questioned whether it was necessary, therefore, for them to include in the rates all the cases that occurred during the course of an employee's work period.

Decision: Eye injuries from wind-blown particles which occur during employment should be considered as work injuries arising out of and in the course of employment, and should be included in the work injury rates.

CASE 742 (5.2)

Facts not clear—no decision.

CASE 743 (5.2)

An employee whose regular occupation was operating a Diesel crawler tractor reported that he was unable to continue work because of a painful back disorder. He stated that for several months prior to this time he had experienced trouble with his back, and that home treatment of massage and heat lamp had kept him able to work. He knew of no blow, strain, or other mishap which could have led to his condition.

The man was admitted to the hospital where his physician diagnosed the case as myositis of para-vertebral muscles caused by the constant vibration and shock attendant to his job as tractor operator. Because this case was rejected by the Workmen's Compensation insurance carrier, and later accepted by their hospitalization insurance carrier on the basis that it was a nonoccupational injury, the company questioned whether the case should be included in their rates.

Decision: This injury should be considered industrial and should be included in the work injury rates on the basis that the incident satisfied paragraph 5.2 (a), and without a statement to the contrary, the committee assumed that the physician whom the employee saw and who said the condition was related to the employee's work, was the one authorized by the company to treat this case.

CASE 744 (1.2.4)

No decision—facts not complete.

CASE 745 (1.2.4 or 5.18)

On a Wednesday, an electrician assigned to electrical construction work installing overhead electrical conduit received an electric shock which was transmitted through his left arm. The employee reported immediately to the medical department, complaining of pain in the upper left arm and shoulder. After examination and symptomatic treatments, he returned to work at a regularly established job which he was able to perform using only his right arm. He finished out the day and also worked his regular shift the following day. He again received treatment on his shoulder and was advised by his supervisor that he would continue to be furnished work which he could do despite his inability to use his left arm.

The plant closed down for a three-day holiday weekend at the close of work on Thursday. On Monday the employee reported for work at his usual time and punched in his time card. Shortly thereafter he reported to the medical department and stated that on Saturday the pain in his arm had become more acute and he had reported to an outside medical facility where an x-ray indicated the possibility of a fracture in his arm near the shoulder. The employee was referred to a company central medical facility where x-rays confirmed the existence of a fracture of the head of the humerus. The employee was referred to a surgeon who applied a strapping which immobilized the left arm. The surgeon believed that this fracture could have occurred as a result of the electric shock even though there was no other direct trauma to the arm or shoulder.

After treatment, the employee went home without returning to the plant because it was close to the end of the shift. He did not report to work the following day, and was visited at his home several days later by his department superintendent who told him that work which he could perform was available to him if he wished to work. The job which the patient would have performed consisted of bench inspection and minor repair work of electrical equipment which could have been performed by him satisfactorily and which was a regular job. The attending physician stated that he

would have permitted the employee to return to the work which his supervisor had planned to give him. The employee did not return to work immediately, however, giving as his reason the fact that his shoulder was painful. Because pain tolerance levels are a personal thing, the doctor could not render an opinion as to whether the disability was justified.

Decision: This should be considered an industrial injury and included in the work injury rates. The Committee on Interpretations had previously stated that if an employee is injured but no doctor is seen, and the employee stays away from work, the case should be counted as a temporary total disability. The members believed that this case was somewhat analogous; namely, that if at the time the doctor treated the employee he did not tell the patient he could return to work, then the case should be counted.

CASE 746

Plants A and B were contiguous to each other but had independent managements, operations, and employee complements. Plant A, however, did not include in its employee group some classes of skilled workers. When work requiring special skills not available at Plant A needed to be done, Plant B assigned the number of skilled men required to perform the work to Plant A. These employees continued on the payroll of Plant B and retained all of their employee rights at that plant. Plant B, however, charged Plant A a fixed fee per hour for the number of hours worked by its employees at Plant A. When working at Plant A, the employees of Plant B and the work they performed were subject to control and inspection by the appropriate supervisor of Plant A.

A skilled employee of Plant B, while working at Plant A, suffered a personal injury, involving a permanent partial disability, on one of the machines of Plant A on which he was performing some work. The work which the employee did in Plant A was assigned and controlled by the management of Plant A, which also controlled his working environment. The company asked to which plant the injury and the consequent time charges should be assigned: to Plant A where the injury occurred, or to Plant B on whose payroll the employee was carried.

Decision: This particular situation is not specifically covered in the standard. The Committee on Interpretations suggested that this injury should be charged to Plant A on the basis that Plant A had responsibility for this employee and his activities.

CASE 747 (1.6)

While delivering mail on foot, a temporary substitute carrier stepped on a piece of wood which forced a nail in his shoe through the insole and into the heel of his right foot. The nail was part of the construction of the man's shoe, although he was not aware of this nail in the shoe. The employee was absent from work for two days as a result of this incident.

Decision: This incident should be considered a work injury and included in the work injury rates on the basis that it arose out of and in the course of employment.

CASE 748 (5.1)

While sorting mail, a clerk sneezed. About an hour later there appeared in the lower right abdomen a small knot which the doctor diagnosed as "hernia, right side."

Decision: This should not be considered a work injury on the basis that it does not meet the three requirement of paragraph 5.1.

CASE 749 (1.6)

A member of a tubing gang which was pulling tubing in an oil production district suddenly "passed out." The men were working at normal speed on a hot summer day. At the time, it was thought he suffered from a heat stroke, but later examination diagnosed the case as a heart attack.

Medical testimony stated that this attack could have occurred regardless of what the employee was doing when the seizure took place. It also stated that he would be able to return to his regular duties as a roustabout within a few weeks. The company asked whether this case should be counted in its records as a disabling injury.

Decision: The Committee on Interpretations did not believe it was in a position to make a definite decision in this case. Whereas the standard provides for inclusion of injuries which arise out of and in the course of employment, and exclusion of injuries which do not arise out of and in the course of employment, the standard also provides that, in case of doubt as to the degree of disability, the decision should be based upon the opinion of the doctor employed or authorized by the employer. In this case it was suggested that the company obtain a definite statement from its doctor regarding the relationship between the employee's work and the heart attack, and base its decision on his opinion.

CASE 750 (5.14)

The employee in question experienced an accident which resulted in injury to his left hand. He reported to the company medical department where he was treated for contusion and laceration of left thumb, left index, middle, and ring fingers. An x-ray showed a small chip fracture of the distal phalanx of the thumb. Following treatment, the injured employee returned to work, but did not return to work the following day. On that morning he reported to the medical department and told the doctor that he had been nauseated during the previous night and was unable to rest for this reason. The doctor reduced the dosage of medicine which the employee was taking to relieve the pain. The medicine contained drugs which apparently caused him to be nauseated, and he returned to work the next day.

Decision: This lost time should not be included in the work injury rates on the basis that the time loss apparently resulted solely from the drug used in treating the injury, and the injury itself was actually a medical treatment case only.

CASE 751 (1.6)

A dryer operator, all of whose duties were performed within a certain area of the plant except for extreme emergencies, was expected to be in that area at all times. During one of his shifts, he left his job area, unauthorized, to discuss a personal matter with another employee who was located in a different area of the plant.

When approached by the dryer operator, the other employee was standing on a platform using a hoe through an opening in an outside lime storage silo knocking down built-up lime deposits on the sides of the silo. The dryer operator took a position just below the platform being used by the other employee. During the discussion the other employee continued to work. Suddenly, a large quantity of lime broke loose and fell to the bottom, causing a cloud of lime dust to rise, some of which came out of the opening and was blown by the wind into the dryer operator's eyes. He washed his eyes out immediately, and was taken to a doctor. Because the condition of his right eye grew worse before it was time for him to report for work the next day, it was necessary for him to see an eye specialist. The specialist said he had received a corneal burn, and advised him not to report for work. A total of six days was lost.

The company questioned whether the injury should be included in the rates on the basis that the dryer operator had removed himself from his employment when he left his proper work area to discuss personal matters.

Decision: This injury should be considered a work injury and included in the rates. The committee was of the opinion that the employee had not taken himself out of his employment, and was injured because of a hazard of the employment.

News Briefs . . .

• JOHN W. W. SULLIVAN, metallurgical engineer, American Iron and Steel Institute, now represents the Institute on the Standards Council of ASA. Mr Sullivan has been in the Institute's research and technology department since 1945. He is a graduate with the degrees of S.B., S.M., and Sc.D. from Massachusetts Institute of Technology. Before World War II he worked in research and development of petroleum, steel, and nonferrous products. During the war he procured ordnance materials for the Army.

Mr Sullivan is author of a number of publications on metals and standards, and is the author of the section entitled "Iron and Steel Industry in the Western Hemisphere" in *The Encyclopedia Americana*, vol 18, 1957.

He is a member of a number of professional societies, including the American Society for Metals, the American Society for Quality Control, the Institute of Mathematical Statistics, and the Standards Engineers Society.

John W. W. Sullivan

• TO ASSIST USERS of the National Electrical Code (American Standard C1.1-1959) to compare the many changes in the new edition with the 1956 edition, an analysis of the changes has been issued. Copies of the analysis, prepared by Howard Michener of the National Electrical Manufacturers Association, are available at 50 cents each from NEMA, 155 E. 44th Street, New York 17, N.Y.

• THE NATIONAL BUREAU of Standards is working to improve the accuracy of electrical measurements, measuring devices, and standards by providing a new check on the ohm and the volt maintained by the Bureau. An accurate capacitance measuring bridge and an accompanying calculable standard of capacitance, developed last year, are the basis for the work. As all the other electrical units in use today may be derived from these two basic units, it is essential that the ohm and the volt be known as accurately as possible.

• THE AMERICAN SOCIETY of Tool Engineers has added the words "and Manufacturing" to its name in order to recognize those of its 40,000 members whose responsibilities branch into all fields of manufacturing engineering.

Headquarters of ASTME are at 10700 Puritan Avenue, Detroit, Michigan. The Society has 162 senior chapters and 29 student chapters in the United States, Canada, and Australia.

The 28th annual conference of the Society, and its annual tool show, are being held in Detroit, April 21 to 28. More than 530 exhibitors will participate in the exposition.

ASTME is a member of the American Standards Association. In addition to representation on the Standards Council it is represented on the Graphic Standards Board and the Mechanical Standards Board. The Society sponsors three projects and is active in nine others.

John G. Mulder

• JOHN G. MULDER, vice-chairman of the Photographic Standards Board, has been appointed administrative assistant to the general manager of Eastman Kodak's Kodak Park. Mr Mulder is a former president of the Photographic Society of America. He has been active on ASA photographic committees for six years.

• PLANS FOR THE TWENTY-FIFTH general meeting of the International Electrotechnical Commission are now well under way. The meeting will be held in New Delhi, India, from October 31 to November 12, 1960.

Department of Commerce officials have commented as follows: "For some time the Department of Commerce has been urging American firms to undertake more sustained promotional efforts to strengthen sales abroad. Effective participation in this specialized meeting could offer not only the occasion to do useful work in the field of standards but also a useful opportunity for American delegates to gain a first-hand knowledge of the numerous developments that are taking place in India's expanding electrical industry."

At present the plans call for meetings of subcommittees on dimensions of motors and of carbon brushes, constants of synchronous machines, radio-receiving equipment, safety, climatic and durability test for radio-

YOUR POSTMASTER, ROBERT K. CHRISTENBERRY, SUGGESTS:
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communication equipment, high-voltage and low-voltage switchgear and controlgear, sockets and accessories for electronic tubes and valves, capacitors and resistors, piezoelectric crystals, connectors and switches, and basic testing procedure.

Full technical committee meetings are scheduled on radio-communication, insulating materials, switchgear and controlgear, insulators, instrument transformers, components for electronic equipment, electric fans, and electrical measuring instruments used in connection with ionizing radiation.

The Committee of Action, the IEC governing body, will also hold its annual meeting at this time.

Technical advisors to the U.S. National Committee of the IEC are now working with U.S. electrical companies, associations, and technical societies to provide competent delegations to represent the U.S. at these meetings.

• STANDARDIZATION is being featured at the annual conference of the Technical Societies of New Jersey, March 29, Hotel Robert Treat, Newark, N.J.

In the morning session, Dr John Gaillard, management consultant, will answer the question, "Why is standardization necessary to you, to industry, to the nation?" R. V. Vittucci, Bureau of Ships, will discuss the importance of standardization to national defense, and Cyril Ainsworth, deputy managing director, ASA, will talk on "What is ASA?"

Leslie D. Price, National Electrical Manufacturers Association, will discuss the benefit of standardization to industry in the afternoon session. He will be followed by a talk on the need of automation in standardization by A. H. King, IBM, and by Franklin G. Wilson on "Safety Standards and You."

Alvin G. McNish, acting chief, Optics and Metrology Division, National Bureau of Standards, is the featured speaker at the dinner session.

1960 Spring Meeting

Company Member Conference of the American Standards Association

Sheraton Hotel, Philadelphia, Pa.

Chairman: *D. F. Hollingsworth, Principal Standards Engineer, Engineering Department, E. I. du Pont de Nemours and Company, Wilmington, Del.*

MONDAY, MAY 2

8:30 REGISTRATION

9:30 WELCOME—H. T. Hallowell, Jr, President, Standard Pressed Steel Co

9:45 KNOW YOUR CMC—Vice Admiral George F. Hussey, Jr, Managing Director, American Standards Association

10:00 NEW DEVELOPMENTS IN PRECISION MEASUREMENT—Alvin G. McNish, Acting Chief, Division of Optics and Metrology, National Bureau of Standards

10:45 MOTIVATIONS FOR REDUCING ITEM VARIETIES
By Consumers—John J. O'Farrell, Jr, Project Manager, Standards Engineering, International Business Machines Corporation
By Consumers—Charles W. Stockwell, Manager, Engineering Standards Section, International Harvester Company
By Suppliers—Herman Muenschinger, Chief Engineer, American Screw Company
By the Military—Benjamin Rosenzweig, Armed Forces Supply Center

2:00 WHAT THE STANDARDS ENGINEER SHOULD KNOW ABOUT SAFETY AND FIRE PREVENTION—Edgar J. Meyers, Assistant Manager, Safety and Fire Protection Division, E. I. du Pont de Nemours and Company

3:00 INDUSTRY'S STAKE IN MILITARY DRAFTING PRACTICE
Coordination of Industrial Drafting Practices—James A. Boxall, SAE Aero-Auto Drawing Standard Committee Member, Ford Motor Company
Reasons for the Military Drafting Requirement (MIL-D-70327)—C. L. Miller, Armed Forces Supply Support Center
Interpretation and Application of MIL-D-70327
(a) *From a Military Viewpoint*—James H. Mars, Bureau of Naval Weapons
(b) *From an Industry Viewpoint*—W. W. Thomas, American Ordnance Association, Electronic Products Division, Radio Corporation of America
Status of Proposed Y14 Industry Panel on Military Standards—C. E. Hilton, Secretary, ASA Graphic Standards Board, American Standards Association

TUESDAY, MAY 3

9:00 PROBLEMS OF THE COMPANY STANDARDS ENGINEER
Getting a Standards Program Started—E. E. Mohr, Engineering Consultant, Engineering Division, Eastman Kodak Company
Numbering, Printing, and Distributing of Standards—P. H. Goeltz, Chief Standards Engineer, Gleason Works
Standardization of Shop Practices—E. S. Geary, Western Electric Company
Standards Promotion and Program Evaluation—R. L. M. Rice, Standards Engineer, E. I. du Pont de Nemours and Company

10:15 *Four concurrent discussion sessions conducted by the above speakers*

11:15 *Summary of discussion sessions*

11:45 *Adjournment*

1:30 *Plant Tours:* Philadelphia Mint; Franklin Institute; du Pont Paint Plant; du Pont Paint Laboratory

For further information about the CMC Spring Meeting, write to Mr Henry G. Lamb, Secretary, Company Member Conference, American Standards Association, 10 East 40th Street, New York 16, N. Y.

AMERICAN STANDARDS

Just Published . . .

If your company is a member of the American Standards Association, it is entitled to receive membership service copies of these newly published American Standards. The ASA contact in your company receives a bimonthy announcement of new American Standards, which also serves as an order form. Find out who your ASA contact is and order your American Standards through him. He will make sure your company receives the service to which it is entitled.

AUTOMOTIVE

Specific Gravity of Concentrated Engine Antifreezes by the Hydrometer, Method of Test for, ASTM D 1122-58; ASA D14.3-1959 (Revision of ASTM D 1122-53; ASA D14.3-1955) $0.30

Sponsor: American Society for Testing Materials

BUILDING AND CONSTRUCTION

Basic Procedure in Panel Spalling Test for Refractory Brick, Method for, ASTM C 38-58; ASA A111.6-1959 (Revision of ASTM C 38-52; ASA A111.6-1955) $0.30

Sponsor: American Society for Testing Materials

CHEMICAL

Turpentine, Methods of Sampling and Testing, ASTM D 233-58; ASA K33.1-1959 (Revision of ASTM D 233-36; ASA K33-1937) $0.30

Sponsor: American Society for Testing Materials

Alkaline Detergents, Methods of Sampling and Chemical Analysis of, ASTM D 501-58; ASA K60.21-1959 (Revision of ASTM D 501-57; ASA K60.21-1958) $0.50

Sponsor: American Society for Testing Materials

ELECTRIC AND ELECTRONIC

Woven Cotton Tapes for Electrical Purposes, Specifications for, ASTM D 335-51; ASA C59.39-1959 $0.30

Physical, chemical, and dimensional characteristics including tolerances and packaging information on woven cotton tapes used in the electrical industry.

Sponsor: American Society for Testing Materials

Outlet Receptacles, Attachment Plug Caps, and Appliance Plugs, C73.1a-1959 (Supplement to C73.1-1957) $0.35

Configuration and dimensions of 277 volts a-c, 15 amp, 2-pole, 3-wire, grounding type cap and receptacles to provide for interchangeability and to promote proper use in accordance with American Standard National Electrical Code.

Sponsor: National Electrical Manufacturers Association

96-Inch (800 Milliampere) T-12 Rapid-Start Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.-702-1959 (Revision of C78.702-1958, 2nd edition) $0.35

72-Inch (800 and 1000 Milliampere) T-12 Rapid-Start Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.701-1959 (Consolidation and revision of C78.701-1956 and C78.703-1958, 2nd edition) $0.35

96-Inch (1.5 Ampere) T-12 and PG-17 Rapid-Start Fluorescent Lamps, Dimensional and Electrical Characteristics of, C78.707-1959 $0.35

Dimensions and electrical starting and operating requirements established for the purpose of ensuring interchangeability of lamps used for general lighting.

Sponsor: Electrical Standards Board

Methods for the Determination of the Elastic, Piezoelectric, and Dielectric Constants — The Electromechanical Coupling Factor of Piezoelectric Crystals, 58 IRE 14.S1; ASA C83.23-1960 $0.75

Sponsor: Electronic Industries Association

GAS-BURNING APPLIANCES

Domestic Gas Ranges, Volume I, Free Standing Units, Z21.1.1-1959 (Revision of Z21.1-1956, Z21.la-1957, Z21.lb-1958) $2.00

Minimum limiting construction and performance requirements and test methods to ensure safe operation, durable construction, and acceptable performance for domestic gas ranges, free standing units, for use with natural, manufactured and mixed gases, liquefied petroleum gases, or LP gas-air mixtures.

Domestic Gas Ranges, Volume II, Built-In Domestic Cooking Units, Z21.1.2-1959 (Revision of Z21.1.2-1956, Z21.-2a-1957, Z21.1.2b-1958) $2.00

Minimum limiting construction and performance requirements and test methods to ensure safe operation, durable construction, and acceptable performance for built-in domestic cooking units; for use with natural, manufactured and mixed gases, liquefied petroleum gases, or LP gas-air mixtures.

Central Heating Gas Appliances, Volume III, Gravity and Fan Type Floor Furnaces, Z21.13.3-1959 (Revision of Z21.13.3-1956, Z21.13.3a-1957, Z21.-13b-1958) $2.00

Minimum limiting construction and performance requirements and test methods to ensure safe operation, durable construction, and acceptable performance for gravity and fan type floor furnaces; for use with natural, manufactured and mixed gases, liquefied petroleum gases, or LP gas-air mixtures.

Hotel and Restaurant Gas Deep Fat Fryers, Z21.27-1959 (Revision of Z21.27-1955, Z21.27a-1956, Z21.27b-1957) $2.00

Minimum limiting construction and performance requirements and test methods to ensure safe operation, durable construction, and acceptable performance for hotel and restaurant gas deep fat fryers; for use with natural, manufactured and mixed gases, for use with liquefied petroleum gases, or LP gas-air mixtures.

Installation of Gas Piping and Gas Appliances, Z21.30-1959 (Revision of Z21.30-1954) $0.50

Basic standards governing the installation of low pressure (not in excess of ½-pound per square inch or 14 inches water column) gas piping systems extending from the outlet of the meter set assembly or the outlet of the services regulator when a meter is not provided, to the inlet connections of appliances, and the installation and operation of residential and commercial gas appliances supplied through such systems. Covers design, fabrication, installation, tests and operation of such systems for fuel gases such as natural gas, manufactured gas, indiluted liquefied petroleum gases, liquefied petroleum gas-air mixtures, or mixtures of any of these gases.

Sponsor: American Gas Association

METALLIC COATINGS

Electrodeposited Coatings of Nickel and Chromium on Steel, Specifications for, ASTM A 166-58T; ASA G53.3-1959 (Revision of ASTM A 166-55T; ASA G53.3-1956) $0.30

Electrodeposited Coatings of Nickel and Chromium on Copper and Copper-Base Alloys, Specifications for, ASTM B 141-58, ASA G53.4-1959 (Revision of ASTM B 141-55; ASA G53.4-1956) $0.30

Sponsor: American Society for Testing Materials

PHOTOGRAPHY

Photographic Chemical Scales, Specifications for, PH4.27-1959 (Partial revision of Z38.8.9-1946) $0.35

Describes a grade of scales suitable for the weighing of chemicals used in amateur and professional photographic processing.

Sponsor: Photographic Standards Board

PIPE AND FITTINGS

Cast Bronze Solder-Joint Drainage Fittings, B16.23-1960 (Revision of B16.23-1955) $2.00

Sponsors: American Society of Mechanical Engineers; Mechanical Contractors of America, Inc; Manufacturers Standardization Society of the Valve and Fittings Industry

Nickel Seamless Pipe and Tube. Specification for, ASTM B 161-58T; ASA H34.1-1959 (Revision of ASTM B 161-49T; ASA H34.1-1955) $0.30

Nickel-Chromium-Iron Alloy Seamless Pipe and Tube, Specification for, ASTM B 167-58T; ASA H34.3-1959 (Revision of ASTM B 167-49T; ASA H34.3-1955) $0.30

Sponsor: American Society for Testing Materials

In Process . . .

As of February 18, 1960

BUILDING AND CONSTRUCTION

In Board of Review

Fireclay Refractory Brick, Classification of, ASTM C 27-58; ASA A111.5- (Revision of ASTM C 27-56; ASA A111.5-1956)

Sponsor: American Society for Testing Materials

In Standards Board

Clay Drain Tile, Specifications for, ASTM C 4-59T; ASA A6.1- (Revision of ASTM C 4-55; ASA A6.1-1956)

Sponsor: American Society for Testing Materials

Gypsum Plasters, Specifications for, ASTM C 28-59; ASA A49.3- (Revision of ASTM C 28-58; ASA A49.3-1958)

Sponsor: American Society for Testing Materials

Rail-Steel Bars for Concrete Reinforcement, Specifications for, ASTM A 16-59T; ASA A50.2- (Revision of ASTM A 16-57; ASA A50.2-1958)

Sponsor: American Society for Testing Materials

Gypsum and Gypsum Products, Methods of Testing, ASTM C 26-59; ASA A70.1- (Revision of ASTM C 26-1958; ASA A70.1-1958)

Sponsor: American Society for Testing Materials

Hollow Load-Bearing Concrete Masonry Units, Specifications for, ASTM C 90-59; ASA A79.1- (Revision of ASTM C 90-52; ASA Z79.1-1953)

Sponsor: American Society for Testing Materials

Hollow Non-Load-Bearing Concrete Masonry Units, Specifications for, ASTM C 129-59; ASA A80.1- (Revision of ASTM C 129-52; ASA A80.1-1953)

Sponsor: American Society for Testing Materials

Solid Load-Bearing Concrete Masonry Units, Specifications for, ASTM C 145-59; ASA A81.1- (Revision of ASTM C 145-52; ASA A81.1-1953)

Sponsor: American Society for Testing Materials

Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units, Specifications for, ASTM C 126-59T; ASA A101.1- (Revision of ASTM C 126-57T; ASA A101.1-1958)

Sponsor: American Society for Testing Materials

Vitrified Clay Filter Block for Trickling Filters, Specifications for, ASTM C 159-59T; ASA A102.1- (Revision of ASTM C 159-55; ASA A102.1-1956)

Sponsor: American Society for Testing Materials

ELECTRIC AND ELECTRONIC

American Standards Approved

Electrical Insulating Oils, Methods of Testing, ASTM D 117-58; ASA C59.2-1960 (Revision of ASTM D 117-54T; ASA C59.2-1955)

Sheet and Plate Materials Used for Electrical Insulation, Methods of Testing, ASTM D 229-58; ASA C59.13-1960 (Revision of ASTM D 229-49; ASA C59.13-1951)

Power Factor and Dielectric Constant of Electrical Insulating Oils of Petroleum Origin, Methods of Test for, ASTM D 924-58; ASA C59.22-1960 (Revision of ASTM D 924-49; ASA C59.22-1951)

Plastics and Electrical Insulating Materials for Testing, Methods of Conditioning, ASTM D 618-58; ASA C59.28-1960 (Revision of ASTM D 618-54; ASA C59.28-1955)

Sponsor: American Society for Testing Materials

250-Watt BT-28 (H5) Mercury Lamp, Physical and Electrical Characteristics of, C78.1301-1960

175-Watt BT-28 (H22) Mercury Lamp, Physical and Electrical Characteristics of, C78.1308-1960

250-Watt BT-28 (H5) Mercury-Fluorescent Lamp, Physical and Electrical Characteristics of, C78.1315-1960

175-Watt BT-28 (H22) Mercury-Fluorescent Lamp, Physical and Electrical Characteristics of, C78.1316-1960

Sponsor: Electrical Standards Board

Fluorescent Lamp Ballasts, Specifications for, C82.1-1960 (Revision of C82.1-1958, 2nd ed.)

Sponsor: Electrical Standards Board

In Standards Board

Electrical Power Insulators, Test Methods for, C29.1- (Revision of C29.1-1944)

Sponsor: Electrical Standards Board

Supplement C57.12.00a to Section 00, General, of American Standard Requirements, Terminology and Test Code for Distribution, Power, and Regulating Transformers and Reactors Other Than Current-Limiting Reactors, C57.12.00-1958

Sponsor: Electrical Standards Board

Reaffirmation Being Considered

Incandescent Lamps:

Train, Locomotive, and Country Home Service, 30-34 and 60-64 Volts, C78.102-1949

Street Railway Service, C78.103-1949

Street Series Service, C78.109-1949

S-6 Bulb, Candelabra Screw Base, C-7 Bulb, Candelabra Screw Base, C78.-200-1949

S-11 Bulb, Medium Screw Base, C78.-201-1949

S-11 Bulb, Intermediate Screw Base, C78.202-1949

S-14 Bulb, Medium Screw Base, C78.-203-1949

A-15 Bulb, Medium Screw Base, C78.-204-1949

A-17 Bulb, Medium Screw Base, C78.-205-1949

A-19 Bulb, Medium Screw Base (Overall Length-Maximum 3 15/16 Inches, Minimum 3 9/16 Inches), C78.206-1949

T-6½ Bulb, Intermediate Screw Base, C78.207-1949

T-10 Bulb, Medium Screw Base, C78.-208-1949

T-10 Reflector Bulb, Medium Screw Base, C78.209-1949

A-19 Bulb, Medium Screw Base (Overall Length-Maximum 4¼ Inches, Minimum 3 7/8 Inches), C78.210-1949

A-19 Bulb, Medium Screw Base (Overall Length-Maximum 4 7/16 Inches, Minimum 4 1/16 Inches), C78.211-1949

T-8 Bulb, Medium Screw Base, C78.-212-1949

PS-25 Bulb, Three-Contact Medium Screw Base, C78.213-1949

PS-25 Bulb, Three-Contact Mogul Screw Base, C78.214-1949

A-21 Bulb, Medium Screw Base (Overall Length-Maximum 4 7/16 Inches, Minimum 4 1/8 Inches), C78.215-1949

A-21 Bulb, Medium Screw Base (Overall Length-Maximum 5 5/16 Inches, Minimum 4 15/16 Inches), C78.216-1949

A-21 Bulb, Medium Screw Base (Overall Length-Maximum 4 15/16 Inches, Minimum 4 9/16 Inches), C78.217-1949

A-23 Bulb, Medium Screw Base, C78.-218-1949

G-30 Bulb, Three-Contact Mogul Screw Base, C78.219-1949

PS-25 Bulb, Medium Screw Base, C78.220-1949

PS-30 Bulb, Medium Screw Base, C78.221-1949

PS-35 Bulb, Mogul Screw Base, C78.-223-1949

PS-40 Bulb, Mogul Screw Base, C78.-224-1949

PS-52 Bulb, Mogul Screw Base, C78.-225-1949

P-25 Bulb, Medium Screw Base, C78.226-1949

G-30 Bulb, Medium Screw Base, C78.233-1949

G-40 Bulb, Mogul Screw Base (Overall Length-Maximum 7 1/16 Inches, Minimum 6 1/2 Inches), C78.234-1949

G-40 Bulb, Mogul Screw Base (Overall Length-Maximum 8 Inches, Minimum 7 7/16 Inches), C78.235-1949

PAR-38 Bulb, Medium Skirted Screw Base, C78.238-1949

PS-25 Bulb, Mogul Screw Base, C78.-245-1949

T-64 Bulb, Mogul Bipost Base, C78.-248-1949

Sponsor: Electrical Standards Board

MECHANICAL

American Standards Approved

Unified Screw Threads, B1.1-1960 (Revision of B1.1-1949)

Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

Milling Cutters, and Nomenclature for Milling Cutter Teeth, B5.3-1960 (Revision and unification of B5.3-1950 and B5cl-1947)

Spindle Noses for Tool Room Lathes, Engine Lathes, Turret Lathes, and Automatic Lathes, B5.9-1960 (Revision of B5.9-1954)

Sponsors: American Society of Tool and Manufacturing Engineers; Metal Cutting Tool Institute; National Machine Tool Builders' Association; Society of Automotive Engineers; American Society of Mechanical Engineers

In Board of Review

Machine Tapers, B5.10- (Revision of B5.10-1953)

Sponsors: American Society of Tool and Manufacturing Engineers; Metal Cutting Tool Institute; National Machine Tool Builders' Association; Society of Automotive Engineers; American Society of Mechanical Engineers

Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service, Specifications for, ASTM A 194-59T; ASA G38.1- (Revision of ASTM A 194-58; ASA G38.1-1959)

Sponsor: American Society for Testing Materials

In Standards Board

Instrument Precision Ball Bearings, Requirements for, B3.10- (Revision of B3.10-1959)

Metal Balls, Specifications for, B3.12-

Sponsor: Anti-Friction Bearing Manufacturers Association

Large Rivets, B18.4- (Revision of B18.4-1950)

Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

METALLIC COATINGS

In Board of Review

Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip, Specifications for, ASTM A 123-59; ASA G8.1- (Revision of ASTM A 123-53; ASA G8.1-1956)

Zinc Coating (Hot Dip) on Iron and Steel Hardware, Specifications for, ASTM A 153-59; ASA G8.14- (Revision of ASTM A 153-53; ASA G8.14-1956)

Sponsor: American Society for Testing Materials

Electrodeposited Coatings of Nickel and Chromium on Zinc and Zinc-Base Alloys, Specifications for, ASTM B 142-59; ASA G53.5- (Revision of ASTM B 142-58; ASA G53.5-1959)

Sponsor: American Society for Testing Materials

METALLURGY

In Board of Review

Zinc-Coated (Galvanized) Iron or Steel Sheets, Coils, and Cut Lengths, Specifications for, ASTM A 93-59T; ASA G8.2- (Revision of ASTM A 93-58T; ASA G8.2-1959)

Safeguarding Against Embrittlement of Hot Galvanized Structural Steel Products and Procedure for Detecting Embrittlement, Recommended Practice for, ASTM A 143-59; ASA G8.13- (Revision of ASTM A 143-46; ASA G8.13-1956)

Sponsor: American Society for Testing Materials

In Standards Board

High-Strength Structural Rivet Steel, Specifications for, ASTM A 195-59T; ASA G42.1- (Revision of ASTM A 195-52T; ASA G42.1-1956)

Sponsor: American Society for Testing Materials

We've Moved!

MISCELLANEOUS

In Board of Review

ASTM Thermometers, Specifications for, ASTM E 1-59; ASA Z71.1- (Revision of ASTM E 1-58; ASA Z71.1-1959)

NUCLEAR ENERGY

In Board of Review

Radiation Symbol, N2.1-

Sponsor: Atomic Industrial Forum

OFFICE EQUIPMENT AND PROCEDURES

American Standard Approved

Office-Type Dictating Equipment, Minimum Requirements for, X2.5.20-1960

American Standard Withdrawn

Template and Method of Attaching Dictating Machine Secretarial Hand Controls to Typewriters, X2.5.18-1954

PETROLEUM PRODUCTS AND LUBRICANTS

American Standards Approved

Method of Test for Water and Sediment by Centrifuge, ASTM D 96-59T; ASA Z11.8-1960 (Revision of ASTM D 96-48; ASA Z11.8-1948)

Distillation of Petroleum Products, Method of Test for, ASTM D 86-59; ASA Z11.10-1960 (Revision of ASTM D 86-56; ASA Z11.10-1956)

Method of Test for Sulfur in Petroleum Products and Lubricants by the Bomb Method, ASTM D 129-58; ASA Z11.-13-1960 (Revision of ASTM D 129-52; ASA Z11.13-1952)

Lubricating Grease, Methods of Analysis, ASTM D 128-59; ASA Z11.16-1960 (Revision of ASTM D 128-47; ASA Z11.16-1948)

Distillation of Gas Oil and Similar Distillate Fuel Oils, Method of Test for, ASTM D 158-59; ASA Z11.26-1960 (Revision of ASTM D 158-58; ASA Z11.26-1955)

Dilution of Gasoline Engine Crankcase Oils, Method of Test for, ASTM D 322-58T; ASA Z11.29-1960 [Revision of ASTM D 322-35; ASA Z11.29-1935 (R1953)]

Method of Test for Knock Characteristics of Motor Fuels by the Motor Method, ASTM D 357-59; ASA Z11.-37-1960 (Revision of ASTM D 357-58; ASA Z11.37-1958)

Distillation of Plant Spray Oils, Method of Test for, ASTM D 447-59T; ASA Z11.43-1960 (Revision of ASTM D 447-57T; ASA Z11.43-1957)

Ramsbottom Carbon Residue of Petroleum Products, Method of Test for, ASTM D 524-59; ASA Z11.47-1960 (Revision of ASTM D 524-58T; ASA Z11.47-1958)

Ash from Petroleum Oils, Method of Test for, ASTM D 482-59T; ASA Z11.54-1960 (Revision of ASTM D 482-46; ASA Z11.54-1947)

Sulfated Residue, Lead, Iron, and Copper in New and Used Lubricating Oils, Methods of Test for, ASTM D 810-59; ASA Z11.57-1960 (Revision of ASTM D 810-48; ASA Z11.57-1949)

Sediment in Fuel Oil by Extraction, Method of Test for, ASTM D 473-59; ASA Z11.58-1960 (Revision of ASTM D 473-48; ASA Z11.58-1949)

Butadiene Content of Polymerization Grade Butadiene and Butadiene Concentrate, Method of Test for, ASTM D 973-59; ASA Z11.66-1960 (Revision of ASTM D 973-50; ASA Z11.66-1950)

Sulfated Ash from New Lubricating Oils, Method of Test for, ASTM D 874-59T; ASA Z11.68-1960 (Revision of ASTM D 874-57T; ASA Z11.68-1957)

Method of Test for Knock Characteristics of Motor Fuels by the Research Method, ASTM D 908-59; ASA Z11.69-1960 (Revision of ASTM D 908-58; ASA Z11.69-1958)

Acetylenes in Butadiene, Method of Test for, (Silver Nitrate Method), ASTM D 1020-59; ASA Z11.74-1960 (Revision of ASTM D 1020-52; ASA Z11.74-1952)

Butadiene Dimer in Styrene Butadiene Concentrates, Method of Test for, ASTM D 1024-59; ASA Z11.79-1960 (Revision of ASTM D 1024-53; ASA Z11.79-1953)

Carbonyl Content of Butadiene, Method of Test for, ASTM D 1089-59; ASA Z11.81-1960 (Revision of ASTM D 1089-53; ASA Z11.81-1953)

Oil-Soluble Sodium Petroleum Sulfonates, Method of Analysis, ASTM D 855-56; ASA Z11.100-1960

Total Inhibitor Content (p-Tertiary-Butyl-Catechol) of Butadiene, Method of Test for, ASTM D 1157-59; ASA Z11.102-1960

Calcium and Barium Petroleum Sulfonates, Method of Analysis, ASTM D 1216-56; ASA Z11.103-1960

Effect of Grease on Copper, Method of Test for, ASTM D 1261-55; ASA Z11.104-1960

Mercaptan Sulfur in Jet Fuels, Method of Test for, (Amperometric Method), ASTM D 1323-56; ASA Z11.105-1960

Lead in New and Used Greases, Method of Test for, ASTM D 1262-55; ASA Z11.106-1960

Sponsor: American Society for Testing Materials

PHOTOGRAPHY

American Standards Approved

Designating and Measuring Focal Lengths and Focal Distances of Photographic Lenses, Methods of, PH3.35-1960 (Revision of Z38.4.21-1948)

Sponsor: Photographic Standards Board

Sheet Film and Plate Processing Tanks, Specifications for, PH4.2-1960 (Revision of PH4.3-1952)

Photographic Trays, Specifications for, PH4.3-1960 (Revision of PH4.3-1952)

Channel-Type Photographic Processing Hangers for Sheet Films and Plates, Specifications for, PH4.4-1960 (Revision of PH4.4-1952)

Photographic Grade Sodium Acid Sulfate, Fused, Specifications for, PH4.105-1960 (Revision of PH4.105-1952)

Photographic Grade Paraformaldehyde, Specification for, PH4.153-1960 (Revision of PH4.153-1949)

Photographic Grade Sodium Ferrocyanide, Specification for, PH4.304-1960

Sponsor: Photographic Standards Board

In Standards Board

Roll Film and Leaders and Trailers for Aerial Photography, Dimensions for, PH1.10- (Revision of PH1.10-1952)

Sponsor: Photographic Standards Board

Speed of Photographic Negative Materials (Monochrome, Continuous Tone), Method for, Determining, PH2.5- (Revision of PH2.5-1954)

Sponsor: Photographic Standards Board

PIPE AND FITTINGS

In Board of Review

Standard Strength Ceramic Glazed or Unglazed Sewer Pipe, Specifications for, ASTM C 261-59T; ASA A106.4- (Revision of ASTM C 261-57T; ASA A106.4-1958)

Sponsor: American Society for Testing Materials

Forged or Rolled Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service, Specifications for, ASTM A 105-59T; ASA G17.3- (Revision of ASTM A 105-58; ASA G17.3-1959)

Sponsor: American Society for Testing Materials

Forged or Rolled Alloy-Steel Pipe Flanges, Forged-Fittings, and Valves and Parts for High-Temperature Service, Specifications for, ASTM A 182-59T; ASA G37.1- (Revision of ASTM A 182-58; ASA G37.1-1959)

Sponsor: American Society for Testing Materials

Forged or Rolled Steel Pipe Flanges, Forged Fittings, and Valves and Parts for General Service, Specifications for, ASTM A 181-59T; ASA G46.1- (Revision of ASTM A 181-58; ASA G46.1-1959)

Sponsor: American Society for Testing Materials

In Standards Board

Cast-Iron Pipe Flanges and Flanged Fittings, Class 125, B16.1- [Revision of B16.1-1948 (R1953)]

Cast-Iron Pipe Flanges and Flanged Fittings, Class 250, B16.2- [Revision of B16b-1944 (R1953)]

Sponsors: American Society of Mechanical Engineers; Manufacturers Standardization Society of the Valve and Fittings Industry; Mechanical Contractors Association of America

Cast Iron Culvert Pipe, Specifications for, ASTM A 142-59T; ASA G26.1- (Revision of ASTM A 142-38; ASA G26.1-1942)

Sponsor: American Society for Testing Materials

PLASTICS

In Board of Review

Deformation of Plastics Under Load, Methods of Test for, ASTM D 621-59; ASA K65.4- (Revision of ASTM D 621-51; ASA K65.4-1959)

Haze and Luminous Transmittance of Transparent Plastics, Method of Test for, ASTM D 1003-59T; ASA K65.5- (Revision of ASTM D 1003-52; ASA K65.5-1959)

Ammonia in Phenol-Formaldehyde Molded Materials, Method of Test for, ASTM D 834-59T; ASA K65.11- (Revision of ASTM D 834-57; ASA K65.11-1959)

Sponsor: American Society for Testing Materials

RUBBER

In Board of Review

Sample Preparation for Physical Testing of Rubber Products, Methods of, ASTM D 15-59T; ASA J1.1- (Revision of ASTM D 15-58T; ASA J1.1-1959)

Sponsor: American Society for Testing Materials

SAFETY

American Standards Approved

Power Presses, Safety Code for, B11.1-1960 (Revision of B11.1-1948)

Sponsor: National Safety Council

TEXTILES

American Standards Approved

Performance Requirements for Textile Fabrics, L22—

Part I—Women's and Girls' Fabrics, L22.10.1-1960 through L22.10.38-1960

Part II—Men's and Boys' Fabrics, L22.20.1-1960 through L22.20.22-1960

Part III—Home Furnishing Fabrics, L22.30.1-1960 through L22.30.15-1960

Part IV—Performance Requirements for Special Characteristics and Finishes, L22.40-1960

Part V—Permanent Labels, Detachable Tags and Certification of Fabrics and Products, L22.50-1960

Part VI—Definitions of Terms, L22.60-1960

Sponsor: National Retail Merchants Association

In Standards Board

Colorfastness to Acids and Alkalis, Test Method for, AATCC 6-1957; ASA L14.2- (Revision of L14.2-1956)

Colorfastness of Wool Textiles to Carbonizing, Test Method for, AATCC 11-1957; ASA L14.3- (Revision of L14.3-1956)

Colorfastness of Silk Textiles to Degumming, Test Method for, AATCC 7-1957; ASA L14.4- (Revision of L14.4-1956)

Colorfastness of Wool Fabrics and Yarn to Fulling, Test Method for, AATCC 2-1957; ASA L14.5- (Revision of L14.5-1956)

Colorfastness of Wool Textiles to Mill Washing and Scouring, Test Method for, AATCC 1-1957; ASA L14.6- (Revision of L14.6-1956)

Colorfastness of Silk Textiles to Peroxide Bleaching, Test Method for, AATCC 13-1957; ASA L14.7- (Revision of L14.7-1956)

Colorfastness to Stoving, Test Method for, AATCC 9-1957; ASA L14.9- (Revision of L14.9-1956)

Single Jute Yarn, Methods of Testing and Tolerances for, ASTM D 541-58; ASA L14.34- (Revision of L14.34-1953)

Glass Yarns, Methods of Testing and Tolerances for, ASTM D 578-58; ASA L14.36- (Revision of L14.36-1951, 2nd ed.)

Jute Rove and Plied Yarn for Electrical and Packing Purposes, Methods of Testing and Tolerances for, ASTM D 681-58; ASA L14.44- (Revision of L14.44-1953)

Rope Made from Bast and Leaf Fibers, Methods of Testing and Tolerances for, ASTM D 738-58; ASA L14.45- (Revision of L14.45-1953)

Spun, Twisted, or Braided Products Made from Flax, Hemp, Ramie, or Mixtures thereof, Methods of Testing and Tolerances for, ASTM D 739-58; ASA L14.46- (Revision of L14.46-1953)

Tex System to Designate Linear Density of Fibers, Yarn Intermediate, Yarns, and Other Textile Materials, Recommended Practice for Use of, ASTM D 861-58T: ASA L14.48- (Revision of L14.48-1953)

Colorfastness to Light (Carbon-Arc Lamp Test: Daylight Test; Sunlight Test), AATCC 16A,B,C-1957; ASA L14.53- (Revision of L14.53-1953)

Colorfastness of Dyed Textiles to Atmospheric Oxides of Nitrogen, Test Method for, AATCC 23-1957; ASA L14.54- (Revision of L14.54-1951)

Resistance of Textiles to Mildew and Rot, and Evaluation of Textile Fungicides, Test Method for, AATCC 30-1957; ASA L14.55- (Revision of L14.55-1951)

Colorfastness to Perspiration, Test Method for, AATCC 15-1957; ASA L14.56- (Revision of L14.56-1956)

Colorfastness to Chlorine Bleaching (Cotton and Linen), Test Method for, AATCC 3-1957; ASA L14.57- (Revision of L14.57-1956)

Colorfastness to Peroxide Bleaching, Test Method for, AATCC 29-1957; ASA L14.58- (Revision of L14.58-1956)

Resistance to Wetting (Static Immersion Absorption Test), AATCC 21-1957; ASA L14.61- (Revision of L14.61-1956)

Colorfastness to Pleating, Test Method for, AATCC 31-1958; ASA L14.63- (Revision of L14.63-1956)

Resistance of Textiles to Insects, Test Method for, AATCC 24-1952; ASA L14.64- (Revision of L14.64-1951)

Evaluation of Insect Pest Deterrents on Textiles, Test Method for, AATCC 28-1952; ASA L14.65- (Revision of L14.-65-1951)

Colorfastness of Silk Textiles to Mill Washing, Test Method for. AATCC 4-1957; ASA L14.70- (Revision of L14.-70-1956)

Colorfastness to Dry and Wet Heat (Hot Pressing), Test Method for, AATCC 5-1957; ASA L14.71- (Revision of L14.71-1956)

GAILLARD SEMINARS

Fourteen conferees attended the Gaillard Seminar on Industrial Standardization held in New York City, January 25 through 29, 1960, as delegates of the 13 organizations listed below. Those marked by an asterisk had been represented also at one or more previous Gaillard Seminars.

*AMP Incorporated
Aeroquip Corp (2 repr.)
*Amer Soc of Mech Engrs
*Amer Standards Assoc
Boeing Airplane Co
Cleveland Elec Illum Co
Electronic Industries Assoc
*Jack & Heintz Inc
Minnesota Mining & Mfg Co
Parke Davis & Co
Quaker Oats Company
Standard Oil Co of Ohio
West Point Manufacturing Co

The next Gaillard Seminar for general attendance will be held in the Engineering Societies Building, New York City, June 20 through 24, 1960.

If any company wishes to have a seminar exclusively for its own personnel, and at a place and time of its own choice, it may make arrangements for such a "Company Standards Seminar" by writing to Dr John Gaillard, 135 Old Palisade Road, Fort Lee, New Jersey.

Colorfastness to Crocking (Rubbing), Test Method for, AATCC 8-1957; ASA L14.72- (Revision of L14.72-1956)

Dimensional Changes in Textiles Other Than Wool, Test Method for, AATCC 40-1957; ASA L14.76- (Revision of L14.76-1956)

Resistance to Water Penetration (Impact Penetration Test), Test Method for, AATCC 42-1957; ASA L14.78- (Revision of L14.78-1956)

Colorfastness of Textiles to Commercial Laundering and Domestic Washing (Accelerated Tests Nos. IIA, IIIA, and IVA), Test Method for, AATCC 61-1957; ASA L14.81- (Revision of L14.-81-1956)

Colorfastness to Water (Distilled or Deionized Water, Sea Water, and Chlorinated Pool Water), Test Method for, AATCC 63-1957; ASA L14.83- (Revision of L14.83-1956)

Damage Caused by Retained Chlorine, Test Method for, AATCC 69-1958; ASA L14.86- (Revision of L14.86-1956)

Average Fiber Diameter of Wool Tops, Card Silver, and Scoured Wool by Micronaire Method, Methods of Test for, ASTM D 1282-57T; ASA L14.104-

Alkali-Solubility of Wool, Method of Test for, ASTM D 1283-57; ASA L14.-105-

Sponsors: American Association of Textile Chemists and Colorists; American Society for Testing Materials

Withdrawal Being Considered

Methods of Testing Woven Asbestos Cloth, L14.35-1953

Sponsors: American Society for Testing Materials; American Association of Textile Chemists and Colorists

Men's and Boys' Woven Athletic-Uniform Fabrics, L22.2.16-1952

Women's and Girls' Woven Shoe Fabrics, L22.1.21-1952

Embroidery Threads, Ribbons and Trimmings, L22.2.23-1952

Sponsor: National Retail Merchants Association

WOOD

In Board of Review

Ash in Wood, Method of Test for, ASTM D 1102-56; ASA O13.1-

Alpha-Cellulose in Wood, Method of Test for, ASTM D 1103-55T; ASA O13.2-

Holocellulose in Wood, Method of Test for, ASTM D 1104-56; ASA O13.3-

Preparation of Extractive-Free Wood, Method for, ASTM D 1105-56; ASA O13.4-

Lignin in Wood, Method of Test for, ASTM D 1106-56; ASA O13.5-

Alcohol-Benzene Solubility of Wood, Method of Test for, ASTM D 1107-56; ASA O13.6-

Ether Solubility of Wood, Method of Test for, ASTM D 1108-56; ASA O13.7-

One-Percent Caustic Soda Solubility of Wood, Method of Test for, ASTM D 1109-56; ASA O13.8-

Water Solubility of Wood, Methods of Test for, ASTM D 1110-56; ASA O13.9-

Methoxyl Groups in Wood and Related Materials, Method of Test for, ASTM D 1166-55T; ASA O13.10-

Sponsor: American Society for Testing Materials

In Standards Board

Wood Paving Blocks for Exposed Platforms, Pavements, Driveways, and Interior Floors Exposed to Wet and Dry Conditions, Specifications for, ASTM D 52-59T; ASA O9.1- (Revision of ASTM D 52-20; ASA O9.1-1958)

Sponsor: American Society for Testing Materials

Creosoted End-Grain Wood Block Flooring for Interior Use, Specifications for, ASTM D 1031-59; ASA O10.1- (Revision of ASTM D 1031-55; ASA O10.1-1958)

Sponsor: American Society for Testing Materials

NEWS ABOUT AMERICAN STANDARDS PROJECTS

Acoustical Standards Board —

A subcommitee set up to determine whether committees under the jurisdiction of the Acoustical Standards Board should take an active part in development of noise codes of a commercial nature reported at the Board's meeting in December 1959. As a basis for its report, the subcommittee classified the standards now being prepared not only by ASA committees but by various national and international organizations. These standards fall into the following categories:

I. Standards on terminology, such as definitions of terms being used in acoustics, vibration, etc.

II. Standards on measuring instruments; for example, the standard on the sound level meter which defines the characteristics of the instrument.

III. Standards on "how to specify the characteristics of apparatus-measuring instruments and other products"; for example, recommendations to the manufacturers as to which characteristics of vibration instruments should be specified in their catalogs—information which is also useful to the user in determining suitability of certain equipment.

IV. Standards on measurement techniques. These contain recommendations on techniques, methods, and instruments (they should be classified as handbooks on this subject); for example, method of apparatus noise measurement.

V. Standards on "how measurements should be made on specific apparatus and other products," specifying the details of the measurement, such as microphone placement, number of microphone positions, etc.

VI. Specification of values as related to installation parameters and power load for specific equipment; for example, maximum noise level for transformers.

The subcommittee recommended that the acoustical sectional committees continue to take the lead in the development of standards of broad interest (categories I through IV), and assist the trade organizations and technical societies in any way possible in writing standards in categories V and VI.

The Acoustical Standards Board, in accepting the report, voted its satisfaction with the organization and scope of the present four committees on acoustics. These are S1, Acoustics; S2, Mechanical Shock and Vibration; S3, Bioacoustics; S4, Sound Recording. It went on record against overlapping the committees' activities with those of trade associations and industry groups in establishing codes of a commercial nature, but voted to assist these organizations wherever the committees' help is needed.

Industrial Gas Equipment Installation and Utilization —

A general conference recommended on January 29 that ASA initiate a project on installation and utilization of industrial gas equipment as requested by the American Gas Association. It was recommended that AGA act as sponsor. The suggested scope of the new project is: "Establishment of basic standards for the installation, safe operation, testing, maintenance, and nomenclature of industrial gas utilization equipment and such remote in-plant gas-air proportioning and mixing equipment which may be employed with that utilization equipment. These standards are also to include in-plant gas piping supply systems and other engineering and design factors not covered by Project B31."

Project B31, Code for Pressure Piping, is sponsored by The American Society of Mechanical Engineers.

The request of the conference is being submitted to the Miscellaneous Standards Board for action.

Code for Pressure Piping, B31 —

Sponsor: American Society of Mechanical Engineers

Interpretation submitted by the sponsor.

From time to time actions taken by Sectional Committee B31 are published for the information of all who are interested in use of the American Standard Code for Pressure Piping, B31.1-1955. While these actions do not constitute formal revision of the Code, they may be utilized in specifications, or otherwise, as representing the considered opinion of the committee.

Pending revision of the Code for Pressure Piping, the Sectional Committee has recommended that ASME, as sponsor, and the American Standards Association publish selected interpretations so that industry may take immediate advantage of corresponding proposed revisions. Case No. 44 is published herewith as an interim action of Committee B31 that will not constitute a part of the Code until formal action has been taken by ASME and ASA.

CASE NO. 44

Inquiry: The latest edition of Section 1 of the American Standard Code for Pressure Piping is 1955. In view of the extensive re-evaluation that has taken place since that time, what joint factors may be applied to fusion-welded pipe made to ASTM Specifications A-155 or A-358 fully radiographed?

Reply: Pending the publication of a revision of the American Standard Code for Pressure Piping, it is the opinion of the committee that the intent of the code will be met if a joint factor of 1.0 is used for pipe made under these specifications in which the pipe has been fully radiographed as required by these specifications.

Electric Lamps, C78 —

Sponsor: Electrical Standards Board

A number of proposed standards have been published for one year's trial use before being considered for final approval as American Standard. They are:

Physical and Electrical Characteristics of 1000-Watt BT-56 (H15) Mercury Vapor Lamp, C78.1309

Physical and Electrical Characteristics of 1000-Watt BT-56 (H12) Mercury Vapor Lamp, C78.1310

Physical and Electrical Characteristics of 1000-Watt BT-56 (H15) Fluorescent Mercury Vapor Lamp, C78.1312

Copies of these proposed American Standards can be obtained from the American Standards Association at 35 cents each.

Library Work and Documentation, Z39 —

Sponsor: Council of National Library Associations

The newly organized subcommittee on machine coding and indexing held its first meeting January 18 and decided on a scope and plan of work. The committee is asking that suggestions be sent to the chairman, Miss Mandalay Grems, IBM Corporation, 590 Madison Avenue, New York, or to the secretary, Harold Pfeffer, U.S. Patent Office, Washington 25, D.C.

"The organization of information into systems which will permit entering, selecting, and retrieving data and information." This is the scope of the subcommittee's work as defined at its first meeting. The committee is not concerned with traditional library methods of handling books. It is especially interested in the possibilities for automatic selection of information with reference to the particular needs of users, and has in mind evaluation of the system itself as well as evaluation of the recovered data in relation to the search question.

The subcommittee plans to prepare a standard glossary describing the systems of specialized language used by as many different groups as possible.

Members of the subcommittee are: C. D. Gull, Computer Department, General Electric Company, Bethesda, Maryland; Dr Karl Heumann, Office of Documentation, National Research Council, Washington, D.C.; Willard Myers, Research and Development, Apparatus & Optical Division, Eastman Kodak Company, Rochester, New York; Ascher Opler, Computer Usage Company, Inc, New York; Randall E. Porter, Ramo-Wooldridge, Canoga Park, California; T. R. Savage, Advanced Systems Development Division, IBM Corporation, Yorktown Heights, N.Y.; Mrs Claire Schultz, Univac Division, Remington Rand, Philadelphia, Pa.; Miss Mary Stevens, National Bureau of Standards, Washington, D.C.; Miss Mandalay Grems, Data Systems Division, IBM Corporation, New York; Harold Pfeffer, Research and Development Group, U.S. Patent Office, Department of Commerce, Washington, D.C.

The next meeting of the subcommittee is scheduled for April in Washington, D.C.

Does Industry Need a National Standards Agency?

DINNSA

by CYRIL AINSWORTH

THERE ARE MANY WAYS of judging the effectiveness of ASA operations. The first that comes to mind is the number of standards approved as "American Standard." The total of 1850 American Standards, most of which have been revised or reaffirmed several times, is ringing testimony that many national organizations have found ASA machinery an effective instrument for national standards development and approval. ASA records show that some 700 national organizations are using ASA to bring into existence the standards they need. This would not be the case if the power that drives the standards-formulating machinery—the rules of procedure—were different from the way they have been described in this column.

The ASA policy of not being a standards-formulating body is not understood by some people and organizations. It seems clear, however, that the several hundred organizations working under the rules of ASA procedure have found value in the fact that ASA does not formulate standards. Many of them have participated not just in a single project but in several projects. They have found strength in the ASA policy of neutrality concerning the technical content of standards. In fact, it is this neutrality that makes the judicial function of ASA significant and makes the designation "American Standard" meaningful.

The number of standards approved and the number of organizations making use of ASA machinery are only two of the points to be considered in judging the effectiveness of ASA operations. Another significant factor is the growth of the national standardization movement, of which ASA is the focal point. Consider the fact that, in 1918, the movement started with the organization of ASA by its five engineering society founder members, whereas today the movement is centered in the ASA federation of 120 national trade associations and technical societies, plus the several hundred national groups previously referred to as users of the coordinating machinery of ASA. That kind of growth does not occur unless there is something very solid back of the organization in which it is centered.

The total cost of participation in national standardization operations cannot be determined or even estimated. However, it takes little imagination to realize that the amount of money expended every year in support of ASA in travel, subsistence, and in time for attendance at meetings of ASA Board of Directors, Standards Council and standards boards is very great. Add to this the amount of money expended each year by the thousands of people participating in the work of sectional committees, general conferences, and in the technical committees of ASA members and non-members, and the total expenditure becomes stupendous. This amount of money is not spent unless there is really something to be gained.

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